AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 7

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0002	19-Oct-2001	W81G66-0136-0948	

6. ISSUED BY CODE DACW27
USA ENGINEER DISTRICT, LOUISVILLE
ATTN: CELRL-CT
600 DR. MARTIN LUTHER KING PLACE
ROOM 821
LOUISVILLE KY 40202

7. ADMINISTERED BY (If other than item 6) CODE DACA27
CONTRACT ADMINSTRATION BRANCH
ATTN: DEBRAUH M. LARDNER
P. O. BOX 59
LOUISVILLE KY 40201-0059

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)

CODE FACILITY CODE

X	9A. AMENDMENT OF SOLICITATION NO. DACW27-00-R-0030
X	9B. DATED (SEE ITEM 11) 23-Aug-2001
	10A. MOD. OF CONTRACT/ORDER NO.
	10B. DATED (SEE ITEM 13)

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [X] is extended, [ ] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS.
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

[ ] A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

[ ] B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

[ ] C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

[ ] D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

Subject Solicitation for Indiana Harbor and Canal Confined Disposal Facility, Subsurface Investigations and Cutoff Wall is amended as follows:

SEE ATTACHED.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remain unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED 19-Oct-2001

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

Changes in Solicitation/Contract/Order Form

The required performance has changed from INDIANA HARBOR AND CANAL CONFINED DISPOSAL FACILITY, SUBSURFACE INVESTIGATIONS AND CUTOFF WALL, CONTRACT NO. 2

The project
consists of subsurface survey investigations and obstruction removal of abandoned petroleum, processed oil and fuel pipes, utilities, and other obstructions and debris; installation of pipeline plugs or caps; utility relocation coordination; well docommissioning; dewatering process and oil boom system installation, operation and maintenance; cutoff wall test section installation, testing and sampling; and construction of approximately 380,000 square feet of vertical barrier/soil bentonite slurry trench cutoff wall under HTW RCRA, TSCA and waste oil environmental requirements and site conditions. The investigation, removal, capping and plugging of subsurface obstruction; the well decommissioning; and the test section will be completed in advance of the cutoff wall construction.

ESTIMATED COST RANGE IS
BETWEEN $10,000,000.00 TO $25,000,000.00.
NAICS Code for this acquisition is 234990
$27.5 Million

THIS PROJECT IS AN UNRESTRICTED PROCUREMENT.

BID MODIFICATIONS
RECEIVED BY FASCIMILE OR TELETYPE WILL NOT BE CONSIDERED.
AWARD IS BEING MADE
PURSUANT TO THE SMALL BUSINESS COMPETITIVENESS DEMONSTRATION PROGRAM to INDIANA
HARBOR AND CANAL CONFINED DISPOSAL FACILITY, SUBSURFACE INVESTIGATIONS AND CUTOFF
WALL, CONTRACT NO. 2

The project consists of subsurface survey investigations and
obstruction removal of abandoned petroleum, processed oil and fuel pipes, utilities, and other obstructions and debris; installation of pipeline plugs or caps; utility relocation coordination; well docommissioning; dewatering process and oil boom system installation, operation and maintenance; cutoff wall test section installation, testing and sampling; and construction of approximately 296,000 square feet of vertical barrier/soil bentonite slurry trench cutoff wall under HTW RCRA, TSCA and waste oil environmental requirements and site conditions. The investigation, removal, capping and plugging of subsurface obstruction; the well decommissioning; and the test section will be completed in advance of the cutoff wall construction.

ESTIMATED COST RANGE IS BETWEEN $10,000,000.00 TO
$25,000,000.00.
NAICS Code for this acquisition is 234990 $27.5 Million

THIS
PROJECT IS AN UNRESTRICTED PROCUREMENT.

BID MODIFICATIONS RECEIVED BY FASCIMILE
OR TELETYPE WILL NOT BE CONSIDERED.
AWARD IS BEING MADE PURSUANT TO THE SMALL BUSINESS COMPETITIVENESS DEMONSTRATION PROGRAM
The contractor period of performance end has decreased from 1010 by 280 to 730
The required response date/time has changed from 15-Oct-2001 16:00 to 30-Oct-2001 16:30

Changes in Section SF 30

19 Oct 01

DACW27-00-R-0030
IHC CDF Subsurface Investigation and Cutoff Wall
Amendment No. 2

Specifications

1. Section 00010, Table of Contents, Division 2 – Site Work, Section 02722, CRUSHED SLAG AGGREGATE FILL MATERIAL is added to this solicitation.
2. **Standard Form 1442**
   Block #10, Description of Project – The approximate number of Square Feet Vertical Barrier/Soil Bentonite Slurry Trench Cutoff Wall is changed from "380,000 square feet" to "296,000 square feet".
   Block #11 – Completion time is changed from "1010" calendar days to "730" calendar days.
   Block #13 – the Proposal Due Date is changed from 15 OCT 2001 at 4:30 PM Local Time to 30 OCT 2001 at 4:30 PM Local Time.
3. Section 00010, Bidding Schedule, The PRICE BREAKOUT SHEETS are deleted in their entirety and the attached PRICE BREAKOUT SHEETS (Amendment 0002) is substituted therefor.
4. Section 00115, under SECTION 2, Subcontracting Information, Paragraph (b) – The goal for HubZones of 2% is added to this solicitation.
5. Delete Section 00320 Appendix B in its entirety and replace with the one attached.
6. Delete Section 00800 in its entirety and replace with the one attached.
7. Section 00830, Wage Rates – General Decision #IN010001 dated 13 July 2001 with 7 mods is deleted and General Decision IN010001 dated 14 September 2001 with 8 mods is hereby incorporated into this solicitation.
8. Delete Section 01100 in its entirety and replace with the one attached.
9. Delete Section 01110 in its entirety and replace with the one attached.
10. Delete Section 01270 in its entirety and replace with the one attached.
11. Delete the Submittal Register at the end of Section 01330 and replace with the one attached.
12. Delete Section 01410 in its entirety and replace with the one attached.
13. Delete Section 02215 in its entirety and replace with the one attached.
14. Delete Section 02260 in its entirety and replace with the one attached.
15. Delete Section 02722 in its entirety and replace with the one attached.
16. Delete Section 11500 in its entirety and replace with the one attached.

Drawings

G-02 Add to contract plan set
C-01 Delete in its entirety and replace with the one attached.
C-02 Delete in its entirety and replace with the one attached.
C-03 Delete in its entirety and replace with the one attached.
C-04 Delete from contract plan set
C-05 Delete from contract plan set
C-06 Delete in its entirety and replace with the one attached.
C-20 Delete in its entirety and replace with the one attached.
C-21 Delete from contract plan set
C-22 Delete from contract plan set
C-23 Delete in its entirety and replace with the one attached.

Supplemental Documents (added to solicitation documents)

Pre-Bid Meeting transcript
Bidders' Questions document

PRICE BREAKOUT FOR TOTAL BASE BID (ITEMS 1-17)

Indiana Harbor Confined Disposal Facility

ITEM	DESCRIPTION	QUANTITY	U/M	U/P	AMOUNT
0001	Mobilization and Demobilization	1	LS	$_____	$_____
0002	Temporary Field Office, Project and Warning Signs	1	LS	$_____	$_____
* 0003	Clearing and Grubbing	32	AC	$_____	$_____
* 0004	Decommission Wells and Piezometers	42	EA	$_____	$_____
0005	Construction Emissions Air Monitoring				
* 0005AA	NIOSH 1501 Samples, FIRST 847	847	EA	$_____	$_____
* 0005AB	NIOSH 1501 Samples, OVER 847	425	EA	$_____	$_____
* 0005BA	NIOSH 5503 Samples, FIRST 847	847	EA	$_____	$_____
* 0005BB	NIOSH 5503 Samples, OVER 847	425	EA	$_____	$_____
* 0005CA	Real-time Construction Emissions Monitoring	1	LS	$_____	$_____
0006	Dewatering Process System				
0006AA	Installation	1	LS	$_____	$_____
* 0006AB	Operation and Maintenance	21	MO	$_____	$_____
0007	Oil Boom System				
0007AA	Installation	1	LS	$_____	$_____
* 0007AB	Operation and Maintenance	21	MO	$_____	$_____
0008	Free Product Storage, Transportation, and Disposal				
* 0008AA	FIRST 15,000	15,000	GAL	$_____	$_____
0008AB	OVER 15,000	1,500	GAL	$_____	$_____
0009	Obstruction Investigation and Inspection Trench	7,300	LF	$_____	$_____
0010	Obstruction Removal and Plugging or Capping				
* 0010AA	Abandoned Sewer Pipelines FIRST 27	27	EA	$_____	$_____
0010AB	Abandoned Sewer Pipelines OVER 27	4	EA	$_____	$_____
* 0010AC	Abandoned Water Pipelines FIRST 25	25	EA	$_____	$_____
0010AD	Abandoned Water Pipelines OVER 25	4	EA	$_____	$_____
* 0010AE	Abandoned Petroleum Pipelines FIRST 57	57	EA	$_____	$_____
0010AF	Abandoned Petroleum Pipelines OVER 57	20	EA	$_____	$_____
* 0010AG	Miscellaneous Pipelines FIRST 15	15	EA	$_____	$_____
0010AH	Miscellaneous Pipelines OVER 15	1	EA	$_____	$_____

* 0010AI	Electrical Power Line/Conduit Termination FIRST 9	9	EA	$_____	$_____
0010AJ	Electrical Power Line/Conduit Termination OVER 9	4	EA	$_____	$_____
* 0010AK	Other Obstruction Removal FIRST 900	900	TON	$_____	$_____
0010AL	Other Obstruction Removal OVER 900	250	TON	$_____	$_____
0010AM	Underground Storage Tank FIRST 1	1	EA	$_____	$_____
0010AN	Underground Storage Tank OVER 1	1	EA	$_____	$_____
0010AO	Removal of Steel Sheet Pile Wall FIRST 1	1	EA	$_____	$_____
0010AP	Removal of Steel Sheet Pile Wall OVER 1	1	EA	$_____	$_____
0010AQ	Temporary Termination & Restart of Cutoff Wall During Active Utility or Pipeline Relocations FIRST 7	7	EA	$_____	$_____
0010AR	Temporary Termination & Restart of Cutoff Wall During Active Utility or Pipeline Relocation OVER 7	7	EA	$_____	$_____
0011	Erosion Control	1	LS	$_____	$_____
0012	Cutoff Wall Installation	219,000	SF	$_____	$_____
0013	Test Section(s) Installation, Sampling, and Test	1	LS	$_____	$_____
0014	Drilling, Sampling and Testing of Borings Prior to Production Cutoff Wall Installation				
* 0014AA	FIRST 45	45	EA	$_____	$_____
0014AB	OVER 45	10	EA	$_____	$_____
0015	Fencing Installation Operation & Maintenance	1	LS	$_____	$_____
* 0016	Security Surveillance Service	21	MO	$_____	$_____
* 0017	Aggregate Fill for Site Surface Depressions				
0017AA	FIRST 1,800	1,800	TON	$_____	$_____
0017AB	OVER 1,800	1,000	TON	$_____	$_____

TOTAL BASE BID (ITEMS 0001 THROUGH 0017) $_____

BID OPTIONS

ITEM	DESCRIPTION	QUANTITY	U/M	U/P	AMOUNT
0018	Railroad Relocation, East Side of Property (approximately Station 43 + 00 to 45 + 00)				
0018AA	Obstruction Investigation & Inspection Trench	100	LF	$_____	$_____
0018AB	Cutoff Wall Installation	17,500	SF	$_____	$_____
0019	Railroad Relocation, West Side of Property (approximately Station 76 + 00 to 89 + 00)				
0019AA	Obstruction Investigation & Inspection Trench	1,300	LF	$_____	$_____
0019AB	Cutoff Wall Installation	59,500	SF	$_____	$_____

TOTAL BID OPTIONS (ITEMS 0018 THROUGH 0019) $_____

TOTAL BASE BID PLUS BID OPTIONS (ITEMS 0001 THROUGH 0019) $_____

Notes:

1. Special Bid Conditions. If a modification to a bid based on unit prices is submitted, which provides for a lump sum adjustment to the total estimated cost, the application of the lump sum adjustment to each unit price in the bid schedule must be stated. If it is not stated, the bidder agrees that the lump sum adjustment shall be applied on a pro rata basis to every unit price in the bid schedule.

2. Optional Bid Items. Optional bid items may, at the option of the Government, be added to the contract at any time within ***625*** calendar days after receipt of Notice to Proceed. The project duration of ***730*** calendar days shown in Section 00800, para. 1 will not be affected by the exercising of the option(s). None, all, or any combination of options may be exercised.

3. Evaluation of Options. The Government will evaluate offers for award purposes by adding the total price for all options to the total price for the Base Bid (Total Base Bid Plus Bid Options). Evaluation of options will not obligate the Government to exercise the options. Please refer to SECTION 00800 SPECIAL CONTRACT REQUIREMENTS, FAR 52.217-5, "EVALUATION OF OPTIONS (JUL 1990)" and to SECTION 0700 CLAUSES".

4. The base bid quantities for obstruction investigation and inspection trench, and cutoff wall installations do not include the quantities in Bid Options 18, and 19. Should the excluded areas covered by the option items become available before the respective investigation and trench and/or cutoff wall installation physically reach the excluded areas, the options will not be exercised for those areas, and the contractor will be paid for completing those areas at the base bid unit price. Quantities added to the base bid item in this manner will not be considered under the variation in estimated quantities clause for the base bid schedule items.

SECTION 00115

PROCEDURES FOR SUBMITTAL OF OFFERS

PART 1 GENERAL REQUIREMENTS

The intent of this solicitation is to select one contractor for the construction of the groundwater cutoff wall including the removal of all obstructions in the alignment of the cutoff wall prior to installation.

1.1 Offerors submitting proposals for this contract should limit submission to data essential for evaluation of proposals so that a minimum of time and monies will be expended in preparing information required herein. However, in order to be effectively and equitably evaluated, the proposals must include information sufficiently detailed to clearly describe the offeror’s qualifications, experience, and plan to successfully complete the contract. Request for Proposal (RFP) requirements are minimums. These Plans and Specifications are based on the installation of a soil-bentonite slurry trench cutoff wall. Proposals based on alternate methods of cutoff wall construction that can meet the specified performance characteristics will be considered.

1.2 Offerors shall submit their proposals to the US Army Corps of Engineers, 600 Dr. Martin Luther King, Jr. Place, Room 821, Louisville, KY 40202-2230 no later than the time and date specified in Block 13 of Standard Form 1442.

1.3 All proposal material shall be submitted in binders with a table of contents and tabbed section dividers. The sections should parallel the submission requirements identified below. Section 1 shall be submitted in original and 4 copies; Sections 2 and 3 shall be submitted in original only and shall be placed in a separate envelope.

PART 2 SUBMITTAL REQUIREMENTS

The proposal shall demonstrate experience, knowledge and ability to perform, manage, construct, and complete all engineering features and project requirements as described in the specifications. Submit the following information as shown and listed below.

SECTION 1: Specialized Corporate Team and Personnel Experience (Tab 1)

a. Specialized Corporate Team Experience (Tab 1a). Provide information demonstrating corporate team experience (both for the prime and subcontractors) within the past 5 years, or as otherwise noted, for projects completed or ongoing which are similar in scope for cutoff wall construction, subsurface investigations and obstruction removal, and environmental requirements for the proposed project. Identify and describe the work performed by the prime and subcontractor for each project. Information shall include experience in the following areas:

1) Soil-bentonite slurry trench cutoff wall construction on an aggregate installed minimum area of 1 million square feet from projects ongoing or completed within the past 10 years. Where an alternate type of cutoff wall is proposed as being equivalent to a soil-bentonite slurry trench, the offeror shall provide information demonstrating a commensurate level of corporate experience.

2) Survey investigation, inspection and obstruction removal, including plugs and caps for utility obstructions located below the top of contaminated groundwater for a minimum of 3 projects (3 completed or 2 complete and 1 ongoing project).

3) Experience in the characterization, storage, treatment, and disposal of all waste types that may be encountered on the site: hazardous (Resource Conservation and Recovery Act, RCRA) waste, Toxic Substances Control Act (TSCA) waste, and waste oil, including experience with record-keeping and reporting, for a minimum of 3 remedial action projects.

4) Management and execution of a minimum of 3 earthwork construction projects involving contaminated materials and requiring a minimum of Level C Personal Protective Equipment (PPE).

5) Work on sites with similar regulatory issues, i.e., projects regulated under RCRA, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), TSCA, or other applicable federal or state regulations for a minimum of 3 projects of 6 months duration or longer requiring the development of an

erosion control plan for contaminant runoff containment and perimeter site monitoring for air pollutants.

6) Installation, operation, and maintenance of a dewatering process system for contaminated groundwater, including oil/water separators, oil storage facilities, and infiltration systems for a minimum of 3 projects.

b. Individual Personnel Experience (Tab 1b). Provide resumes with name and title/position, indicating the name and salient features of the project(s) on which each individual gained the requisite experience for the job classification categories identified. Identify the role the individual played in the project. The offeror may use the attached format for resumes. Personnel experience shall include but is not limited to the following:

1) Project Manager with a minimum of 5 years full time experience in managing construction contracts for cutoff wall installation using the proposed cutoff wall construction method, subsurface obstruction identification and removal, and environmental remediation.

2) Cutoff Wall Specialist responsible for conducting the operations with a minimum of 5 years experience in the management and supervision of soil-bentonite slurry trench cutoff wall projects, 35 feet or greater in depth. Where an alternate type of cutoff wall is proposed as being equivalent to a soil-bentonite slurry trench, the offeror shall provide information demonstrating a commensurate level of individual experience.

3) Cutoff Wall Equipment Operator with slurry trench excavation experience using similar equipment that may be required for this contract on a minimum of 2 projects, 35 feet or greater in depth. Where an alternate type of cutoff wall is proposed as being equivalent to a soil-bentonite slurry trench, the offeror shall provide information demonstrating a commensurate level of individual experience.

4) Safety and Occupational Health Manager and Certified Industrial Hygienist with a minimum of 3 years experience as described in SECTION 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTW/UST).

5) Contractor Quality Control (CQC) System Manager with a minimum of 5 years construction quality control management experience for cutoff wall installation using the proposed cutoff wall construction method, subsurface obstruction identification and removal, and environmental protection and remediation projects, similar to this contract or a minimum of 10 years experience in related work.

c. Past Performance (Tab 1c). Provide references for the projects listed in Section 1a, Specialized Corporate Team Experience, including a project description, the original and final completion dates, points of contact, and phone numbers. Provide performance ratings, performance awards, and letters of commendation for the projects. Also provide phone number and point-of-contact (POC) for reference verification of the key personnel identified in Section 1b,Individual Personnel Experience.

d. Project Organizational Chart (Tab 1d). Provide an organizational chart depicting the organization described in the proposal. At a minimum, include 1) the cutoff wall construction, 2) the subsurface investigation, obstruction removal, pipeline capping or plugging work, and 3) the environmental, quality control, and safety components of the work. Indicate how the prime contractor and subcontractors interrelate, and show the appropriate authority levels. Identify all key personnel and subcontractors included on the chart.

e. Proposed Layout of Work (Tab 1e).

1) Cutoff Wall. Provide a narrative description of the methods and approach to be used to construct the cutoff wall in accordance with the plans, specifications, and design details. Proposals using methods of cutoff wall construction other than the soil-bentonite slurry trench method that will result in equal or better performance will be considered. If the offeror elects to propose an alternate cutoff wall method, then the offeror shall also provide the documentation discussed below and that required by SECTION 02260. The offeror of an alternate cutoff wall method shall specify the methods that will be used to control the quality of construction and to document achievement of the specified performance criteria. Clearly describe how permeability, wall thickness, depth and alignment of the alternate cutoff

wall will be measured and how achievement of the minimum specified performance criteria will be documented. The offeror of an alternate method shall also provide a specification for the test section. Provide a description of how the permeability of the test section will be determined for the alternate cutoff wall method, and procedures to be implemented in the event the permeability exceeds the permeability required by SECTION 02260.

2) Obstruction Removal. Provide a description of the methods and approach to be used to ensure successful completion of the obstruction survey and removal work in accordance with the plans and specifications. The narrative shall also address the procedures to be used for the following items: removing and managing free product; managing groundwater and surface water during obstruction removal and cutoff wall installation; locating, plugging and removal of utilities, including potential live utilities; and removal of other obstacles, including buried reinforced concrete slabs and other materials that might be expected at the site of a refinery that operated from 1918 to 1981.

3) Safety. Provide a narrative description of how all of the project features will be safely constructed (protection of site personnel as well as surrounding community and environment) given the floating product and shallow groundwater at the site. Describe the approach and methods to monitor air quality in the immediate work zone and prevent any increase in contaminant levels in air at the property boundary.

4) Schedule. Provide a proposed schedule, which details the duration and sequence to accomplish all significant features of the project. The schedule shall address contingencies for the specified options, weather delays and any other factors that may delay completion of the project. Indicate the critical path and minimum expected duration of the project.

SECTION 2: Subcontracting Information (Tab 2)

a. Small Business Utilization (Tab 2a). Past Performance on Utilization of Small, Small Disadvantaged and Women-Owned Small businesses. All firms must identify its past efforts to comply with Clause 52.219-8, Utilization of Small, Small

Disadvantaged and Women-Owned Small Business Concerns. Large business offerors will provide details of its efforts on previous projects containing subcontracting plans that clearly represent its past efforts to comply with FAR Clause 52.219-9, Alt. I and II, Small Business Subcontracting Plan. Information is to be limited to projects performed within the past five years.

b. Subcontracting Plan for Large Business (Tab 2b). Large business offerors shall submit a subcontracting plan in accordance with Contract Clauses 52-219-8 and 52-219-9. To be acceptable, plans must adequately address the required statutory elements and provide sufficient information to enable the Contracting Officer to answer affirmatively questions A through H of Appendix CC, Part 2, AFARS 19-705. The offeror may use the attached sample Subcontracting Plan as a starting point. Percentage goals apply to the total amount being subcontracted. The current goals for the Louisville *** District are 61.4% to Small Business, 9.1% to Small Disadvantage Business, 5.0% to Woman-Owned Small Business, * 2% for HubZones *, and 3% for Veteran-Owned Small Business (including Service-Disabled Veteran-Owned Small Business).**

SECTION 3: Price (Tab 3)

a. Price (Tab 3a). The offeror shall submit, in a separate envelope, Standard Form 1442 and the Bidding Schedule in original only. Both of these forms make up SECTION 00010 SOLICITATION, OFFER AND AWARD, SF-1442, BIDDING SCHEDULE.

b. Representations and Certifications (Tab 3b). The offeror shall submit one completed original of SECTION 00600 REPRESENTATIONS, CERTIFICATIONS, AND STATEMENT OF BIDDERS.

c. Self-performed Work (Tab 3c). The offeror shall identify the construction parts of the project that will be self-performed by in-house forces and the percentage for each part. At least 20 percent of the total amount of work must be performed directly by the Prime Contractor.

d. Pro Forma Requirements (Tab 3d). One copy of the following information shall be provided:

1) Proof of financial ability (Most recent financial statement covering assets and liabilities).
2) Number of years the firm has been in business.

3) Name, address, and telephone number of firm’s bonding company.
4) Information showing offeror’s bondability for this project. Include the bond rate.
5) Name, address, and telephone number of two credit/trade references.

END OF SECTION

SECTION 00320 - GEOTECHNICAL DATA

APPENDIX B

Available Construction Diagrams

MW-1, MW-4 through MW-7, MW-11 through MW-33 (pages B1-B28)

P-01 through P-08, P-10 through P-16, P-18 (pages B29-B44)

CE-101, 103, 104, 106 and 109 through 115 (pages B45-B55)

*** There are a total of 42 wells to be decommissioned as part of this contract; they are the following: BD-03, BD-04, OEP-001 through OEP-008, P-115 through P-134, P-11 through P-16, P-18, MW-4, MW-25, MW-26, MW-27, and MW-31. ***

Note: Construction diagrams are not available for the following wells to be decommissioned:

- BD-03 and BD-04,
- OEP-001 through OEP-008, and
- P-115 through P-134

SECTION 00800

SPECIAL CONTRACT REQUIREMENTS

INDEX

SECTION 00800

SPECIAL CONTRACT REQUIREMENTS

PART 1 GENERAL

1.1 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) FAR 52.211-10.

The Contractor shall be required to commence contract work within fifteen (15) calendar days after the date of receipt by him of Notice to Proceed to prosecute the work diligently, and to
* complete the entire work ready for use not later **than seven
* hundred thirty (730)** consecutive calendar days after the date of receipt of Notice to Proceed. The time stated for completion shall include final cleanup of the premises.

1.2 LIQUIDATED DAMAGES - CONSTRUCTION (SEP 2000) FAR 52.211-12.

a. If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of $1,647.00 for each calendar day of delay until the work is completed or accepted.

b. If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

1.3 PERFORMANCE OF WORK BY THE CONTRACTOR(APR 1984) FAR 52.236-1.

The Contractor shall perform on the site, and with its own organization, work equivalent to at least twenty percent (20%) of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

1.4 PHYSICAL DATA (APR 1984)FAR 52.236-4

Information and data furnished or referred to below are furnished for the Contractor's information. However, it is expressly understood that the Government will not be responsible for any interpretation or conclusion drawn therefrom by the Contractor.

a. Physical Conditions. The Physical Conditions indicated on the drawings and in the specifications are the results of on-site surveys.

b. Weather Conditions. Data regarding temperature and precipitation may be obtained from the U.S. Weather Bureau Station located at Chicago, Illinois.

c. Transportation Facilities. The Contractor must satisfy himself as to the available railroad and highway facilities.

d. Location. The project site is located in East Chicago, Lake County, Indiana.

e. Utility Information. In November 1997, Smith Engineering Consultants, Inc. was contracted by the U.S. Army Corps of Engineers Chicago District to review existing reports, as-builts drawings (record drawings), engineering drawings, utility maps, surveys, and various other maps and reports that Chicago District obtained from the Energy Cooperative Inc. (ECI) drawings and records archive. Smith Engineering then incorporated all the information into a series of digital utility maps. This information is represented on the project drawings. The location and status of many lines are unknown and have not been field verified. It shall be the responsibility of the Contractor to contact and field verify utility and pipeline locations, and inform all service owners and pipeline companies prior to initiating site work. A list of Points of Contact for potential utilities is included in SECTION 01100 GENERAL PROVISIONS, Paragraph 1.14, which may or may not be all-inclusive.

f. Ambient Air Conditions. Data regarding ambient air conditions that exist near the site at the Hammond Air Monitoring Trailer is located at IDEM’s TOXwatch web page, http://www.ai.org/idem/oam/toxwatch/index.htm.

1.5 LAYOUT OF WORK (APR 1984) FAR 52.236-17.

The Contractor shall layout the work from Government-established base lines and benchmarks indicated on the drawings and from the control data shown in Attachment 00200 - B. The Contractor shall be responsible for all measurements in connection with the lay-out. The Contractor shall furnish, at his own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the contract plans and specifications. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through his negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the

replacement from any amounts due or to become due to the Contractor.

1.6 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)
DFARS 252.236-7001

a. The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

b. The Contractor shall:

(1) Check all drawings furnished immediately upon receipt.

(2) Compare all drawings and verify the figures before laying out the work.

(3) Promptly notify the Contracting Officer of any discrepancies.

(4) Be responsible for any errors that might have been avoided by complying with this paragraph (b).

(5) Reproduce and print contract drawings and specifications as needed.

c. In general:

(1) Large-scale drawings shall govern small-scale drawings.

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

d. Omissions from the drawings or specifications, or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

e. The work shall conform to the specifications and the contract drawings identified on the following index of drawings:

DRAWING

NO.	REFERENCE #	TITLE
1	G-01	LOCALITY & VICINITY MAPS
2	G-02	INDEX
3	B-01	BORING LOCATION PLAN
4	B-02	SOIL PROFILE WEST SIDE SECTION A-A'
5	B-03	SOIL PROFILE NORTH SIDE SECTION B-B'
6	B-04	SOIL PROFILE EAST SIDE SECTION C-C'
7	B-05	SOIL PROFILE SOUTH SIDE SECTION D-D'
8	B-06	TEST SECTION DETAILS
9	C-01	WORK LIMITS
10	C-02	SITE PLAN AND STAGING AREAS
11	C-03	POTENTIAL UTILITIES STA. 105+50 TO STA. 5+60
	~~C-04~~	~~POTENTIAL UTILITIES STA. 5+60 TO STA. 11+95~~ **DELETED**
	~~C-05~~	~~POTENTIAL UTILITIES STA. 11+95 TO STA. 18+06~~ **DELETED**
12	C-06	POTENTIAL UTILITIES STA. 18+06 TO STA. 26+00
13	C-07	POTENTIAL UTILITIES STA. 26+00 TO STA. 32+20
14	C-08	POTENTIAL UTILITIES STA. 32+20 TO STA. 38+40
15	C-09	POTENTIAL UTILITIES STA. 38+40 TO STA. 44+60
16	C-10	POTENTIAL UTILITIES STA. 44+60 TO STA. 50+40
17	C-11	POTENTIAL UTILITIES STA. 50+40 TO STA. 55+80
18	C-12	POTENTIAL UTILITIES STA. 55+80 TO STA. 61+80
19	C-13	POTENTIAL UTILITIES STA. 61+80 TO STA. 68+00
20	C-14	POTENTIAL UTILITIES STA. 68+00 TO STA. 73+60
21	C-15	POTENTIAL UTILITIES STA. 73+60 TO STA. 79+80
22	C-16	POTENTIAL UTILITIES STA. 79+80 TO STA. 86+00
23	C-17	POTENTIAL UTILITIES STA. 86+00 TO STA. 92+20
24	C-18	POTENTIAL UTILITIES STA. 92+20 TO STA. 98+80

25	C-19	POTENTIAL UTILITIES STA. 98+80 TO STA.105+50
	~~C-20~~	~~ECI ABANDONED AND MISC. PIPELINES STA. 105+50 TO STA. 5+60~~ **DELETED**
	~~C-21~~	~~ECI ABANDONED AND MISC. PIPELINES STA. 5+60 TO STA. 11+95~~ **DELETED**
26	C-22	ECI ABANDONED AND MISC. PIPELINES STA. 11+95 TO STA. 18+06
27	C-23	ECI ABANDONED AND MISC. PIPELINES STA. 18+06 TO STA. 26+00
28	C-24	ECI ABANDONED AND MISC. PIPELINES STA. 26+00 TO STA. 32+20
29	C-25	ECI ABANDONED AND MISC. PIPELINES STA. 32+20 TO STA. 38+40
30	C-26	ECI ABANDONED AND MISC. PIPELINES STA. 38+40 TO STA. 44+60
31	C-27	ECI ABANDONED AND MISC. PIPELINES STA. 44+60 TO STA. 50+40
32	C-28	ECI ABANDONED AND MISC. PIPELINES STA. 50+40 TO STA. 55+80
33	C-29	ECI ABANDONED AND MISC. PIPELINES STA. 55+80 TO STA. 61+80
34	C-30	ECI ABANDONED AND MISC. PIPELINES STA. 61+80 TO STA. 68+00
35	C-31	ECI ABANDONED AND MISC. PIPELINES STA. 68+00 TO STA. 73+60
36	C-32	ECI ABANDONED AND MISC. PIPELINES STA. 73+60 TO STA. 79+80
37	C-33	ECI ABANDONED AND MISC. PILELINES STA. 79+80 TO STA. 86+00
38	C-34	ECI ABANDONED AND MISC. PIPELINES STA. 86+00 TO STA. 92+20
39	C-35	ECI ABANDONED AND MISC. PIPELINES STA. 92+20 TO STA. 98+80
40	C-36	ECI ABANDONED AND MISC. PIPELINES STA. 98+80 TO STA. 105+50
41	R-01	ECI PROJECT SITE (PRE-DEMOLITION)

42	R-02	CANAL STEEL SHEETPILE BULKHEAD
43	R-03	BASE MAP
44	R-04	SANITARY AND STORM UTILITIES
45	R-05	WATER UTILITIES
46	R-06	OIL UTILITIES
47	R-07	FUEL UTILITIES
48	R-08	MISCELLANEOUS UTILITIES
49	R-09	ELECTRICAL, STEAM, GAS MAIN, AND TELEPHONE UTILITIES
50	R-10	CONTAMINATED AREAS

f. Drawings R-01 through R-10 are reference drawings, and are included in the plans for information only. The information shown may or may not reflect existing site conditions. It is expressly understood that the Government will not be responsible for any interpretation or conclusion drawn therefrom by the Contractor.

1.7 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE EFARS (MAR 1995)52.231-5000.

a. Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a Contractor or subcontractor at any tier shall be based on actual cost data when the Government can determine both ownership and operating costs for each piece of equipment or equipment groups of similar serial and series from the Contractor's accounting records. When both ownership and operating costs cannot be determined from the Contractor's accounting records, equipment costs shall be based upon the applicable provisions of EP 1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule," Region II. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the Contracting Officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used, or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retrospective pricing, the schedule in effect at the time of the work was performed shall apply.

b. Equipment rental costs are allowable, subject to the provisions of FAR 31.105(D) (ii) and FAR 31.205-36, substantiated by certified copies of paid invoices. Rates for equipment rented from an organization under common control, lease-purchase, or sale-leaseback arrangements will be determined using the schedule except that rental costs leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated leasees are allowable. Costs for major repairs and overhaul are unallowable.

c. When actual equipment costs are proposed and the total amount of the pricing action is over $25,000, cost or pricing data shall be submitted on Standard Form 1411, "Contract Pricing Proposal Cover Sheet". By submitting cost or pricing data, the Contractor grants to the Contracting Officer or an authorizing representative the right to examine those books, records, documents, and other supporting data that will permit evaluation of the proposed equipment costs. After price agreement, the Contractor shall certify that the equipment costs or pricing data submitted are accurate, complete, and current.

1.8 CONTINUING CONTRACTS. EFARS 52.232-5001 (MAR 1995)

a. This is a continuing contract, as authorized by Section 10 of the River and Harbor Act of September 22, 1922 (33 U.S. Code 621). The payment of some portion of the contract price is dependent upon reservations of funds from future appropriations, and from future contribution to the project having one or more non-Federal project sponsors. The responsibilities of the Government are limited by this clause notwithstanding any contrary provision of the "Payments to Contractor" clause or any other clause of this contract.

b. The sum of $100,000 has been reserved for this contract, and is available for payments to the Contractor during the current fiscal year. It is expected that Congress will make appropriations for future fiscal years from which additional funds, together with funds provided by one or more non-Federal project sponsors, will be reserved for this contract.

c. Failure to make payments in excess of the amount currently reserved, or that may be reserved from time to time, shall not entitle the Contractor to a price adjustment under the terms of this contract except as specifically provided in paragraphs f. and i. below. No such failure shall constitute a breach of this contract, except that this provision shall not bar a breach-of-contract action if an amount finally determined to be due as a termination allowance remains unpaid for one (1) year due solely to a failure to reserve sufficient additional funds therefore.

d. The Government may at any time reserve additional funds for payments under the contract if there are funds available for such purpose. The Contracting Officer will promptly notify the Contractor of any additional funds reserved for the contract by issuing an administrative modification to the contract.

e. If earnings will be such that funds reserved for the contract will be exhausted before the end of any fiscal year, the Contractor shall give written notice to the Contracting Officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payment due or to become due under the contract during that fiscal year. This notice shall be given not less than forty-five (45) nor more than sixty (60) days prior to the estimated date of exhaustion.

f. No payments will be made after exhaustion of funds except to the extent that additional funds are reserved for the contract. The Contractor shall be entitled to simple interest on any payment that the Contracting Officer determines was actually earned under the terms of the contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97, as in effect on the first day of the delay in such payment.

g. Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall not constitute a breach of this contract, and shall not entitle the Contractor to any price adjustment under the "Suspension of Work" clause or in any other manner under this contract.

h. An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of funds.

i. If, upon the expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to reserve sufficient additional funds to cover payments otherwise due, the Contractor, by written notice delivered to the Contracting Officer at any time before such additional funds are reserved, may elect to treat his right to proceed with the work as having been terminated. Such a termination shall be considered a termination for the convenience of the Government.

j. If at any time it becomes apparent that the funds reserved for any fiscal year are in excess of the funds required to meet

all payments due or to become due the Contractor because of work performed and to be performed under the contract during the fiscal year, the Government reserves the right, after notice to the Contractor, to reduce said reservation by the amount of such excess.

1.9 VARIATIONS IN ESTIMATED QUANTITIES -SUBDIVIDED ITEMS (MAR 1995) (EFARS 52.212-5001)

This Variation in Estimated Quantities - Subdivided Items clause is applicable only to Item Nos. 0005, 0008, 0010, 0014, *** and 0017 ***.

a. Variation from the estimated quantity in the actual work performed under any second or subsequent sub-item or elimination of all work under such a second or subsequent sub-item will not be the basis for an adjustment in contract unit price.

b. Where the actual quantity of work performed for Item Nos. 0005, 0008, 0010, 0014, and ***0017*** is less than 85 percent of the quantity of the first sub-item listed under such item, the Contractor will be paid at the contract unit price for that sub-item for the actual quantity of work performed and, in addition, an equitable adjustment shall be made in accordance with the clause FAR 52.211-18, Variation in Estimated Quantity.

c. If the actual quantity of work performed under Item Nos. 0005, 0008, 0010, 0014, and***0017*** exceeds 115 percent or is less than 85 percent of the total estimated quantity of the sub-items under that item, and/or if the quantity of work performed under the second sub-item or any subsequent sub-item under Item Nos. 0005, 0008, 0009, 0014, and ***0017*** exceeds 115 or is less than 85 percent of the estimated quantity of any such sub-item, and if such variation causes an increase or a decrease in the time required for performance of this contract the contract completion time will be adjusted in accordance with the clause FAR 52.211-18, Variation in Estimated Quantity.

1.10 BASIS FOR SETTLEMENT OF PROPOSALS (JUL 1989) EFARS 52.249-5000

Actual costs will be used to determine equipment cost for a settlement proposal submitted on the total cost basis under FAR 49.206-2(b). In evaluating a termination settlement proposal using the total cost basis, the following principles will be applied to determine allowable equipment costs:

a. Actual costs for each piece of equipment, or groups of similar serial or series equipment, need not be available in the

Contractor's accounting records to determine total actual equipment costs.

b. If equipment costs have been allocated to a contract using predetermined rates, those changes will be adjusted to actual costs.

c. Recorded job costs adjusted for allowable and unallowable expenses will be used to determine equipment operating expenses.

d. Ownership costs (depreciation) will be determined using the Contractor's depreciation schedule (subject to the provisions of FAR 31.205-11).

e. License, taxes, storage, and insurance costs are normally recovered as an indirect expense, and unless the Contractor charges these costs directly to contracts, they will be recovered through the indirect expense rate.

1.11 INDIANA SALES AND USE TAX 52.228-4010

a. This contract is a construction contract that contains separate amounts applicable to the performance of the services and the furnishing of the materials as defined in State of Indiana, Department of Revenue Information Bulletin No. 60, dated 2 December 1987. Notwithstanding any other provisions of this contract, the contract price does not include any amount for Indiana Sales and Use Tax on materials to be incorporated by the Contractor or subcontractor into the structure or improvement to real estate. The Contractor or subcontractor should provide his supplier with a State of Indiana General Exemption Certificate for Construction Contractors (Form ST-134) with respect to such property.

b. For the purpose of complying with the requirements of State of Indiana, Department of Revenue Information Bulletin No. 60, dated 2 December 1987, the Contractor, pursuant to the requirements of the solicitation shall furnish prior to contract award a breakdown separating pricing (1) materials to be incorporated into the structure or improvement to real estate, (2) services and other obligations of the construction contract, and (3) the total contract price. This breakdown is for the sole purpose of complying with the requirements of State of Indiana, Department of Revenue Information Bulletin No. 60, dated 2 December 1987, with regard to separate pricing of services and materials, and has no other contractual significance.

c. Any subcontracts awarded hereunder shall also contain separate amounts applicable to the performance of services and the furnishing of the materials.

1.12 WARRANTY OF CONSTRUCTION (MAR 1994) 52.246-21

a. In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph i. of this clause, that work performed under this contract conforms to the contract requirements, and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one (1) year from the date of final acceptance of all work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one (1) year from the date the Government takes possession.

c. The Contractor shall remedy at the Contractor's expense any failure to conform or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or controlled real or personal property, when that damage is the result of:

1) The Contractor's failure to conform to contract requirements, or

2) Any defect of equipment, material, workmanship, or design furnished.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one (1) year from the date of repair or replacement.

e. The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Government shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:

1) Obtain all warranties that would be given in normal commercial practice.

2) Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer.

3) Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

h. In the event the Contractor's warranty under paragraph (b.) of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

i. Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

j. This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

1.13 EVALUATION OF OPTIONS (JUL 1990) 52.217-5

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).

1.14 PERMITS AND RESPONSIBILITIES, CITY OF EAST CHICAGO

Offerors are cautioned that pursuant to FAR 52.236-7 Permits and Responsibilities, which will be part of the awarded contract, the Contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses and permits, and for complying with any Federal, State, and municipal laws, codes, and regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract. Offerors are cautioned that the work to be performed is within East Chicago, Indiana which has a number of building department codes and regulations, including but not limited to, certain

permit fees and licensing requirements associated with construction activities within East Chicago, Indiana. Pursuant to the terms and conditions set forth in FAR 52.236-7, the Contractor shall be responsible, without additional cost to the Government, to obtain all necessary licenses and permits from East Chicago, Indiana associated with this work and satisfy all applicable requirements associated with building permits from East Chicago, Indiana, including but not limited to, the payment of building permit fees, making project presentations and satisfying licensing and bonding requirement for the prime and subcontractors. Offerors may direct any questions relating to licenses and permits required by East Chicago, Indiana to the East Chicago Building Department at 219-391-8294.

*** 1.15 PARTNERING**

The Government intends to encourage the formation of a Partnering relationship with the Contractor. This Partnering relationship would be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The overall objective would be to achieve a quality project, constructed in accordance with plans and specifications, and completed safely, within budget, and on schedule. This Partnering relationship between the Contractor and the Government would be voluntary and its implementation would not be part of the contract requirements, nor would it result in a change to contract price or terms.

It is anticipated that the Partnering relationship would include a Partnering Conference to be held immediately after the preconstruction conference. The Partnering Conference would consist of a one- to two-day team building workshop. Follow-up workshops may be held periodically throughout the duration of the contract, as agreed to by the Government and the Contractor. The Government and the Contractor would share costs of the facilitator and facilities for the workshops equally.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

GENERAL DECISION IN010001 09/14/01 IN1
 General Decision Number IN010001

 Superseded General Decision No. IN000001

 State: Indiana

 Construction Type:
 BUILDING
 HEAVY
 HIGHWAY

 County(ies):
 LA PORTE PORTER
 LAKE ST JOSEPH

 BUILDING CONSTRUCTION PROJECTS (does not include single family
 homes and apartments up to and including 4 stories, HEAVY AND
 HIGHWAY CONSTRUCTION PROJECTS

 Modification Number Publication Date
 0 03/02/2001
 1 03/09/2001
 2 04/06/2001
 3 05/04/2001
 4 06/01/2001
 5 06/29/2001
 6 07/06/2001
 7 07/13/2001
 8 09/14/2001

COUNTY(ies):
LA PORTE PORTER
LAKE ST JOSEPH

 * ASBE0017C 06/01/2001

	Rates	Fringes
LAKE AND PORTER COUNTIES		
ASBESTOS WORKERS	29.05	12.96
HAZARDOUS MATERIAL HANDLER (INCLUDES PREPARATION, WETTING, STRIPPING REMOVAL SCRAPPING, VACUUMING, BAGGING AND DISPOSAL OF ALL INSULATION MATERIALS,		

WHETHER THEY CONTAIN ASBESTOS OR NOT, FROM MECHANICAL SYSTEMS)	20.20	9.02

---

* ASBE0075A 06/01/2001

	Rates	Fringes
REMAINING COUNTIES:		
ASBESTOS WORKERS	25.34	6.10
HAZARDOUS MATERIAL HANDLERS (includes preparation, wetting, stripping, removal, scrapping, vaccuming, bagging, and disposal of all insulation materials, whether they contain asbestos or not, from mechanical systems	15.55	4.50

BOIL0001E 07/01/2001

	Rates	Fringes
LAKE COUNTY, City of Hammond; North of 114th Street		
BOILERMAKERS	33.19	4.55+14%

BOIL0374P 07/01/2001

	Rates	Fringes
BOILERMAKERS	26.85	10.70

BRIN0004E 06/01/2001

	Rates	Fringes
MERRILLVILLE LAKE, LAPORTE AND PORTER COUNTIES		
BRICKLAYERS, STONMASONS, CAULKERS, POINTERS, CLEANERS	26.54	8.27
MARBLE SETTER, TILE SETTER, AND TERRAZZO WORKERS	26.00	8.77
TILE, TERRAZZO AND MARBLE FINISHERS	20.27	4.60

BRIN0004F 06/01/2001

	Rates	Fringes

SOUTH BEND
ST. JOSEPH COUNTY

BRICKLAYER, MASON, POINTER, CLEANER & CAULKER	22.81	7.02
MARBLE, TILE LAYER AND TERRAZZO WORKERS	21.60	5.47
TILE, TERRAZZO AND MARBLE FINISHERS	20.27	4.60

CARP0765A 06/01/2001

	Rates	Fringes
LAKE, LAPORTE AND PORTER COUNTIES		
HEAVY, HIGHWAY AND BUILDING CONSTRUCTION:		
Carpenters	27.15	11.77
Millwrights	27.25	11.77

---

* CARP0888A 06/01/2001

	Rates	Fringes
ST JOSEPH COUNTY (ZONE 1)		
CARPENTERS	22.52	5.76
MILLWRIGHTS	20.72	5.41
HEAVY AND HIGHWAY CONSTRUCTION	20.46	4.44

---

* ELEC0153A 06/04/2001

	Rates	Fringes
ST JOSEPH COUNTY		
ELECTRICIANS	25.20	8.82
COMMUNICATION TECHNICIANS	18.95	2.80+11.5%

Includes the installation, operation, inspection, modification, maintenance and repair of systems used for the transmission and reception of signals of any nature, for any purpose, including but not limited to, sound and voice transmission/transference systems, communication systems that transmit or receive information and/or control systems, television and video systems,

micro-processor controlled fire alarm systems, and security systems and the performance of any task directly related to such

installation or service. The scope of work shall exclude the installation of electrical power wiring and the installation of conduit raceways exceeding fifteen (15) feet in length.

ELEC0531A 08/28/2000

	Rates	Fringes
LAPORTE AND PORTER COUNTIES		
ELECTRICIANS	27.00	9.05

ELEC0697A 05/28/2001

	Rates	Fringes
LAKE COUNTY:		
ELECTRICIANS	30.00	11.62

ELEC0697D 10/01/2000

	Rates	Fringes
LAKE COUNTY		
TELECOMMUNICATIONS TECHNICIAN	22.36	9.12

Work covers low voltage installation, maintenance and removal of telecommunication facilities (voice, sound, data and video) including, telephone and data inside wire, interconnect, terminal equipment, central offices, PABX, fiber optic cable and equipment, micro waves, V/SAT, bypass, CATV, WAN (WIDE AREA NETWORKS), LAN (local area networks), and ISDN (integrated system digital network). Does not cover any work which properly comes under the work description of Inside JW (Journeyman Wireman), but shall cover the pulling of wire in raceways, but not the installation of raceways.

ELEC1393Q 01/01/2001

	Rates	Fringes
LAKE & PORTER COUNTIES (Calumet Area, North of U.S. Hwy 30)		
LINE CONSTRUCTION:		
LINEMAN	27.45	2.20+21.5%
GROUNDMAN, EQUIPMENT OPERATOR: (Diggers 5th wheel type trucks,		

crawler type, D-4 and smaller, bucket trucks and live boom type line trucks)	21.65	2.20+21.5%
EQUIPMENT OPERATOR (Backhoe over 1/2 yard bucket capacity, cranes rated at 15 ton or more capacity) 95% of J.L. Rate	26.07	2.20+21.5%
GROUNDMAN-TRUCK DRIVER	19.32	2.20+21.5%
GROUNDMAN	16.14	2.20+21.5%

ELEV0002P 07/03/2000

	Rates	Fringes
LAKE AND PORTER COUNTIES		
ELEVATOR CONSTRUCTION:		
ELEVATOR MECHANIC	32.695	6.935+a&b

FOOTNOTES:
a. Seven paid holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Day after Thanksgiving; & Christmas Day.

b. Employer contributes 8% of regular hourly rate to vacation pay credit for employee who has worked in business more than 5 years; Employer contributes 6% of regular hourly rate to vacation pay credit for employee who has worked in business less than 5 years.

---

* ELEV0057A 09/01/2001

	Rates	Fringes
LAPORTE AND ST. JOSEPH COUNTIES		
ELEVATOR MECHANIC	25.145	7.455 a+b

FOOTNOTES:
a. Employer contributes 8% basic hourly rate for 5 years or more of service or 6% basic hourly rate for 6 months to 5 years of service as vacation pay credit.

b. New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Day plus the Friday after Thanksgiving Day.

---

* ENGI0150A 06/01/2001

	Rates	Fringes
LAKE, LAPORTE, PORTER COUNTIES		
BUILDING CONSTRUCTION POWER EQUIPMENT OPERATORS:		
GROUP 1	29.35	10.50
GROUP 2	28.85	10.50
GROUP 3	26.90	10.50
GROUP 4	25.70	10.50
GROUP 5	24.30	10.50

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt Plant; Autograde; Batch Plant); Benoto (requires 2 engineers; Boiler & throttle valve; Boring machine (mining machine); Caisson Rigs; Central redi-mix plant; Combination Backhoe Endloader with backhoe bucket over 1/2 cu. yd. or with attachments; Combination tugger hoist & air compressor; Compressor & throttle; Concrete Breaker (truck mounted); Concrete conveyor; Concrete conveyor (truck mounted); Concrete paver over 27E cu.ft.; Concrete paver 27E cu. ft. & under; Concrete placing boom; Concrete pump/grout pump with boom (truck mounted); Concrete pump with boom (truck mounted); concrete tower; Cranes and Backhoes (All Attachments); Cranes, Hammerhead Tower; Creter Crane; Derricks (all); Derricks (traveling); Forklift lull type; Forklift, 10 ton & over; Gradall, Hoist 1, 2, and 3 drums; Hoist (2 tugger l floor), Hydraulic Boom truck, Laser Screed, Locomotive (all), Motor patrol, Mucking Machine; Pile Driving and Skid rig, Pit machine, Prestress Machines, Pump cretes (and similar types), Rock Drill (self-propelled), Rock Drill Truck mounted; Slip form paver, Straddle buggies, Tractor with boom and side boom, Trenching Mechine; Winch Tractors, Welding machines (6-9),

GROUP 2: Air Comporessor (3) (feeding a common receiver); Asphalt Spreader; boilers; bulldozers; Combination Backhoe end loader with Backhoe bucket 1/2 cu. yd. and under or with attachments; Corboy drilling machine; Grader, Elevating; Grouting machines; Guard rail post driver; Highlift Shovel or frontend loader; Hoist (automatic), Hoist (all elevators); Hoist (tugger and single drum); Post hole digger; rollers (all); Scoop (tractor drawn); Stone crushers; Tournapull; Winch trucks

GROUP 3: Air compressor - small 210 and under (1 to 5 not to exceed a total of 300 feet); Air compressor - large over 210; Air compressor (2) feeding a common receiver; Combination - small equipment operator; Concrete mixer (two bag & over); Conveyor,

portable; Forklift-under 10 ton; Generator; Pumps (1 to 3 not to exceed a total of 300 feet); Pumps, well points; Steam generators; Tractors, farm & similar type; Welding machines (2 thru 5); Winches, 4 electric drillo winches

GROUP 4: Bull gang (crane erection crew); Heaters, mechanical (1 to 5); Oilers; Switchmen

Group 5: Fork lifts (Housing and commercial only)

ENGI0150P 06/01/1999

	Rates	Fringes
ST. JOSEPH COUNTY		
BUILDING CONSTRUCTION		
POWER EQUIPMENT OPERATORS:		
GROUP 1	21.25	8.00+a
GROUP 2	19.90	8.00+a
GROUP 3	19.10	8.00+a
GROUP 4	18.30	8.00+a
GROUP 5	15.70	8.00+a

FOOTNOTE:
a. PAID HOLIDAYS: New Years Day, Fourth of July, Thanksgivng Day, Decoration Day, Labor Day and Christmas Day

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Mechanic, Asphalt Plant, Asphalt Spreader, Auto Grader; Batch Plant, Benoto (requires 2 Engineers), Boiler and Throttle Valve, Boring Machine (road), Bulldozers (with engines of 140 net horse power or more) Caisson Rigs, Central Redi-mix Plant, Concrete Conveyor Systems, Concrete Power (over 27E cu. ft.), Concrete Paver (27E cu. ft. and under), Concrete Pumps/Grout cncrete placer (Truck Mounted), Concrete Tower, Cranes and backhoes (all), Cranes, Hammerhead Tower, Creter Crane, Derricks (all), Forklift (capble of hoisting and mechanically moving forks horizontally), Grader, Elevating, Highlift Shovels or Front End Loaders (over 3 yd bucket), Hoists (2 or more drums), Locomotives (all), Laser screed, Motor Patrol, Pile Drivers and Skid Rig, Pre-Stress Machines, Pump Cretes & Similar Types, Rock Drill (Self-Propelled), Rock Drill (self propelled Truck Mounted), Scoops (tractor drawn), Slip-Form Paver, Tournapull, Tractor with Boom &

Side Boom, Trenching Machine (12 or more inches in width), Combination Backhoe Front End Loader Machine with backhoe 1/2 yd bucket or attachments.

GROUP 2: Air Compressor (600 cu. ft. and over), Bob Cat (over 3/4 cu. yd.), Boilers, Broom (all powered propelled), Bull Dozers with engines of less than 140 net horsepower, combination backhoe front end loader 1/2 yf bskhhoe or under, Compressor and Throttle Valve, Concrete Breaker (truck mounted), Concrete Mixer (of moore than 21 cu. ft. capacity), Forklift (with fixed or tilt mast), Greaser Engineer, Highlift shovel or front endloader 3 yd bucket and under, Hoists (1 drum), Hydrulic Boom Truck, Post Hole Digger (vehicle mounted), Pump Cretes (squeze crete type pumps, Gypsum, bulker , Rollers(all), Steam Generators, Stone Crushers, Stradddle Buggies, Tractors, Winch Trucks (with "a" frame.

GROUP 3: Buck Hoist, Combination (small equipment operator), .Conveyor (portable), Grouting Machine, Hoist Elevators (material and personnel), Hydraulic Power Units, Grouting and Pile Driving, Stud Welder, Trenching Machines less than 12 inches in width, Welding Machines (8 through 15).

GROUP 4: Bobcat (up to and including 3/4 cu. yd.). Compressor (over 210 cu. ft. and less than 600 cu. ft.), Generator (over 50 kw.), Heaters, Mechanical, Hoists (all elevator, permanent installation), Hoist (automatic), Hoist (tugger single drum), Oilers, Pumps, Well Points and electric submersible, Small Rubber Tired End Loaders (1/4 cu. yd. and under), Tractors (farm type) Welding Machines (2 through 8)

GROUP 5: Bobcats and forklifts (commercial or residential)

---

* ENGI0150R 05/01/2001

	Rates	Fringes
LAKE, LAPORTE, PORTER AND ST. JOSEPH COUNTIES		
POWER EQUIPMENT OPERATOR HEAVY/HIGHWAY		
GROUP 1	27.80	9.72
GROUP 2	27.35	9.72
GROUP 3	26.90	9.72
GROUP 4	25.70	9.72
GROUP 5	24.65	9.72

POWER EQUITMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt plants (construction), Asphalt plant (permanent), Auto Patrol (Maintainer), Automatic Dry Batch Plant, Automated Concrete Placer, Automated Sub-Grader, Automated Slip Form Paver, Automated Finish Machine, Combination Backhoe Front, End Loader Machine (1/2 cu. yd.), Backhoe bucket or over or with attachments), Combination backhoe 1 cu yd, Backhoe bucket or over or with attachments, Ballast Regulator (RR), Belt Loader (stationary), Boring Machine (road), Bulldozer, Concrete Mixer(27 cu. ft. or over), Concrete Pump (truck mounted), Concrete Breaker (truck mounted and self-propelled), Core Drilling Machine, Cranes and Backhoes (all attachments), Cranes, Hammerhead, Creter Crane, Crushers (concrete, rock, recycling, etc.), Derricks , Derricks (traveling), Dredge Operator, Formless Curb and Gutter Machine (36 inches and over), Formless Curb and Gutter Machine under 36 inches, Gradall and Machines (of a like nature), Guardrail Post Driver (truck mounted), Lead Greaser, Helicopter, Highlift Shovel (3 yd. and over), Hoist (1 drum), Hoist (2, and 3 drums), Hydraulic Power Units (grouting, piledriving and extracting) Hydro or water blaster (self-propelled), Locomotive Operators, Mechanic, Welder, Mucking Machine, Panelboard Concrete Plant (central mix type), Paver (Hetherington), Pile Driver (Skid or Crawler), Road Paving Mixer, Rock Drill Crawler or Skid Rig, Rock Drill (truck Mounted), Ross Carrier, Roto Mill Grinder (36" and over), Roto mill grinder (less than 36"), Throttle Valve and Compressor or Clever Brooks Type Combination, Throttle Valve and Fireman Combination or Horizontal or Upright Boiler, Tournapull or similar type equipment, Tractor (boom), Tractor Drawn Belt Loader with attached Pusher (requires two engineers), Trench Machine, Tug Boat Operator, Wheel Excavator, Winch Tractor with "a" frame, Scoops, Turnapull or similar types machine used in Tandem (add $1.00 to class l hourly rate for each machine attached there to).

GROUP 2: Combination Backhoe Front End Loader Machine with less than 1/2 cu. yd., Backhoe Bucket or with attachments, Bituminous Mixer, Bituminous Paver, Bridge Deck Finisher, Concrete Mixer (less than 27 cu. ft.), Compressor and throttle valve, Compressor (common receiver 3), Greaser, Highlift Shovels (under

3 cu. yds.), Jersey Spreader or Base Paver, Pavement Bump Grinder (self-propelled), Roller (Asphalt, waterbound, Macadam, Bituminous Macadam, Brick Surface, Sheepfoot Roller (self- propelled with blade), Surface Heater and Planer, Tamper (mutiple vibrating, asphalt waterbound macadam, bituminouus macadam, brick surface), Tractor (push), Tractor with scoop, Widener, Apsco or similar type.

GROUP 3: Back Filler, Bituminous Distributor, Broom and Belt

Machine, Bull Float, Compressor (common receiver 2), Concrete cutter wheel type (rockwell), Concrete Finishing Machine, Concrete Spreader (power driven), Digger, Post Hole (power driven), Finishing Machine and Bull Float, Forklift, Form Grader, Form Tamper (motor driven), Hydraulic (boom truck) when used for hauling materials, Laser screed, Mutiple Tamping Machine, Paving Breaker, Roller (earth and subbase material), Roller sheepfoot (self-propelled), Sub-grader, Tamper, Mutipile Vibrating (earth and subbase material), Tractaire with Drill, Tractor (with all drawn attachements except backhoe and including Highlift, Endloader of 1 cu. yd. capacity and less.

GROUP 4: Air Compressors, Conveyor (all), Fireman on Boiler, Generator, Grout Machine, Power curing Spraying Machine (self-propelled), Broom (self-propelled), Seaman Tiller, Skid steer loaders, Spike Machine (RR), Stripping Machine (paint, self-propelled), Throttle Valve, Welding Machine, Well Points System.

GROUP 5: Deck Hand, Hetherington Driver, Mechanical Heater (1 to 5), Outboard or Inboard Motor Boat, Oiler, Power Saw (Concrete Power Driven), Water Pump, Grasscutter.

IRON0292A 06/01/2001

	Rates	Fringes
ST. JOSEPH and LAPORTE (REMAINDER OF COUNTY)		
IRONWORKERS	20.65	10.31

IRON0395A 06/01/2001

	Rates	Fringes
LAKE, PORTER AND LAPORTE (FROM LAKE MICHIGAN ON NORTH TO 50 MILES S. OF LAKE MICHIGAN ON THE S. AND FROM IN/IL STATE LINE ON W. TO 3 MILES E. OF IN. COUNTIES		
IRONWORKERS:		
STRUCTURAL & ORNAMENTAL	25.80	14.68
SHEETER	26.05	14.68

LABO0041A 06/01/2001

	Rates	Fringes

LAKE, LAPORTE AND PORTER COUNTIES

LABORERS:

BUILDING CONSTRUCTION:

GROUP 1	23.48	4.90
GROUP 2	23.78	4.90
GROUP 3	24.48	4.90

GROUP 1: Building and Construction Laborers; Scaffold Builders (other than for Mason or Plasterers); Railroad Workers, Masonry Wall Workers, (interior & exterior); Portable Water, Pumps with discharge up to 3 indches; Handling of Creosote Lumber or Like Treated Material (excluding railroad material); Asphalt Rakers and Lutemen; Earth compactors; Jackmen and Sheetmen Working Ditches Deeper than Six (6) Feet in Depth; Laborers Working Ditches Six (6) Feet in Depth or Deeper; Assembly of Unicrete Pump; Tile Layers (sewer or field) and Sewer Pipe Layers (metallic or non-metallic); Motor Driven Wheelbarrows and Concrete Buggies; Hyster Operators; Pump Crete Assemblers; Core Drill Operators; Cement, Lime or Silica Clay Handler (bulk or bag); Handling of Toxic Materail Damaging to Clothing; Pneumatic Spikers; Deck Engine and Winch Operators; Water main and Cable Ducking (metallic and non-metallic); Screed Man or Screw Operator on Asphalt Paver; Chain Saw and Demolition Saw Operators; Concrete Saw; Concrete Conveyor Assemblers; Applying of Curing Compound; Sinking of Wellpoints; Dewatering Header Systems

Group 2: Plaster Tenders, Masons Tenders; Mortar Mixers; Welders (acetylene or electric); Cutting Torch or Burner; Cement Nozzle Laborers; Cement Gun Operators; Scaffold Builders for Plasterers; Scaffold Builders for Masons; Water Blast Machine Operators; Air Tool Operators and all Pneumatic Tool Operators, Air and Electric Vibrators and Chpping Hammer Operators; Asbestos Removal; Hazardous Waste Removal; All Boiler Setters Laborers, including expediters, bottom men, bell men, and Mason Tenders

Group 3: Dynamite Men; Drillers, Air Track or Wagon Drilling for explosives.

LABO0081B 04/01/2001

	Rates	Fringes
LABORERS		

HEAVY and HIGHWAY CONSTRUCTION:

ST JOSEPH COUNTY

GROUP 1	17.47	4.90
GROUP 2	17.77	4.90
GROUP 3	18.47	4.90

LAKE, LAPORTE AND PORTER COUNTIES

GROUP 1	18.99	4.90
GROUP 2	19.29	4.90
GROUP 3	19.99	4.90

LABORERS (HEAVY AND HIGHWAY) GROUP DESCRIPTIONS

GROUP 1: Construction Laborer; Carpenter Tender; Fence Erector; Grade Checker; Guard Rail Erector; Continuous Steel Rod or Mat Installer; Wire Mesh Layer; Joint Man (Mortar, Mastic, and all other types); Lighting Installer (Permanent or Temporary); Lineman for Automatic Grade Maker on Paving Machines; Mortar Man; Multi-Plant Erector; Rip-rap Installer (all Products and Materials); Road Marking and Delineation Laborer; Setting and Placeing of all Precast Concrete Products; Sing Installation including Supporting Structure; Spraying of all Epoxy, Curing Compound, or Like Material; Flagperson; Air Tool, Power Tool, and Power Equipment Operator; Asphalt Raker Man; Batch Truck Dumper; Bridge Hand Rail Erector; Handler (bulk or bag cement); Chain Saw Man; Concrete Puddler; Concrete Rubber; Concrete Saw Operator; Core Drill Operator, Eye Level; Hand Blade Operator Hydro Seeder Man; Motor Driven Georgia Buggy Operator; Power Driven Compactor or Tamper Operator; Power Saw Operator; Pump Crete Assembly Man; Screed Man or Screw Man on Asphalt Paver; Rebar Installer; Sandblaster Man; Sealer Applicator for Asphalt (toxic); Setting and Placeing Prestressed on Precast Concrete Structural Members; Side Rail Setters (for Sidewalk, Side Ditches, Radii, and Pavement); Spreader Box Tender (manual or power driven); Straw Blower Man; Subsurface Drain and Culvert Pipe Layer; Transverse and and longitudinal Hand Bull Float Man; Concrete Conveyor; Horizonial Boring and Jackman and Sheetman; Pipe Grade Man; Winch and Windlass Operator Conduit Installer, Sod Layer.

GROUP 2: Cutting Torch Burner: Laser Beam Aligner; Manhole Erector; Sewer Pipe Layer; Water Line Installer, Temporary or Permanent; Welders (electric or Oxy-Acetylene).

GROUP 3: Air Track and Wagon Drillman; Dynamite and Powder Man; Concrete Barrier Rail Form Setter; General Laborer; Concrete finisher; transverse and longitudinal hand; bull float man, concrete saw, joint control cutting

---

LABO0645A 06/01/2001

	Rates	Fringes
ST JOSEPH COUNTY:		
LABORERS:		
BUILDING CONSTRUCTION:		
GROUP 1	17.93	4.90
GROUP 2	18.13	4.90
GROUP 3	18.23	4.90
GROUP 4	18.93	4.90

BUILDING CONSTRUCTION

GROUP 1: Building and Construction Laborers; Scaffold Builders (other than for Plasterers); Ironworker Tenders; Mechanic Tenders; Window Washers and cleaners; Waterboys and Toolhousemen; Roofers Tenders; Railroad Workers; Masonry Wall Washers (interior and exterior); Cement Finisher Tenders; Carpenter Tenders; All Portable Water pumps with discharge up to (3) inches; Plaster Tenders; Mason Tenders; Flag & Signal Person.

GROUP 2: Waterproofing; Handling of Creosot Lumber or like treated material (excluding railroad material);Asphalt Rakers and Lutemen; Kettlemen; Air Tool Operators and all Pneumatic Tool Operators; Air and Electric Vibrators and Chipping Hammer Operators; Earth Compactors Jackmen and Sheetmen working Ditches deeper than (6) ft.in depth; Laborers working in ditches (6) ft.in depth or deeper; Assembly of Unicrete Pump; Tile Layers (sewer or field) and Sewer Pipe Layer (metallic or non-metallic); Motor driven Wheelbarrows and Concrete Buggies; Hyster Operators; Pump Crete Assemblers; Core Drill Operators; Cement, Lime or Silica Clay Handlers (bulk or bag); Handling of Toxic Materials damaging to clothing; Pneumatic Spikers; Deck Engine and Winch Operators; Water Main and Cable Ducking (metallic and non-metallic); Screed Man or Screw OPerator on Asphalt Paver; Chain and Demolition Saw Operators; Concrete Conveyor Assemblers.

GROUP 3: Water Blast Machine Operator; Mortar Mixers; Welders (Acetylene or electric); Cutting Torch or Burner; Cement Nozzle. Laborers; Cement Gun Operator; Scaffold Builders when Work ing for Plasterers.

GROUP 4: Dynamite Men; Drillers - Air Track or Wagon Drilling for explosives Hazardous and Toxic material handler, asbestos removal or handler.

LABO0645B 04/01/2001

	Rates	Fringes
ST JOSEPH COUNTY		
LABORERS (UTILITY CONSTRUCTION)		
GROUP 1:	17.67	4.90
GROUP 2:	17.97	4.90
GROUP 3:	18.67	4.90

LABORER CLASSIFICATIONS (UTILITY CONSTRUCTION)

GROUP 1: Construction laborer; Fence erector; Flagger; Grade checker; Guard rail erector; Wire mesh layer; Joint man (mortar, mastic and all other types); Lighting installer (permanent or temporary); Lineman for automatic grade maker on paving machines;

Mortar man; Multi-plateerector; Rip-rap installer (all products and materials); Road markin and delineation laborer; Setting and placing of all precast concrete products; Sign installation including supporting structure; Spraying of all epoxy, curing compound, or like material; sod layer; Air tool, power tool, and power equipment operator; Asphalt lute man; Asphalt raker man; Batch truck dumper; Bridge handrail erector; Handler (bulk or bag cement); Chain saw man; concrete puddler; concrete rubber; Concrete saw operator; Core drill operator, eye level; Hand blade operator; Hydro seeder man; Motor-driven Georgia buggy operator; Power-driven cmpactor or tamper operator; Power saw operator; Pumpcrete assembly man; Screed man or screw man or asphalt paver; Rebar installer; Sandblaster man; Sealer applicator for asphalt (toxic); Setting and placing prestressed or precast concrete structural members; Side rail setter (for sidewalks, side ditches, radii, and pavements); Spreader box tender (manual or power-driven); Straw blower man; Subsurface drain and culvert pipe layer; Transverse and longitudinal hand bull float man; Concrete conveyor assembly man; Horizontal boring and jacking man; Jackman and sheetman; Pipe grade man; winch and windlass operator

GROUP 2: Cutting torch burner; Laser beam aligner; Manhole erector; Sewer pipe layer; Water line installer, temporary or permanent; Welder (electric or exy-acetylene) in connection with

waterline and sewer work, Hod Carrier (tending bricklayers); TVing and associated grouting of utility lines.

GROUP 3: Air track and wage drillman; Concrete barrier rail form setter; Dynamite and powder man; General leadman; Concrete Finisher; Transverse and Longitudinal hand Bullfloat man; Concrete Saw Joint Cutting

---

LABO0999F 04/01/2001

	Rates	Fringes
LAKE COUNTY		
LABORERS (UTILITY CONSTRUCTION)		
GROUP 1	19.82	4.90
GROUP 2	20.12	4.90
GROUP 3	20.82	4.90
LAPORTE AND PORTER COUNTIES		
LABORERS (UTILITY CONSTRUCTION)		
GROUP 1	19.47	4.90
GROUP 2	19.77	4.90
GROUP 3	20.47	4.90

LABORERS CLASSIFICATIONS (UTILITY CONSTRUCTION)

GROUP 1: Construction laborer; Fence erector; Flagger; Grade checker; Guard rail erector; Wire mesh layer; Joint man (mortar, mastic and all other types); Lighting installer (permanent or

temporary); Lineman for automatic grade maker on paving machines; Mortar man; Multi~plate erector; Rip~rap installer (all products and materials); Road marking and delineation laborer; Setting and placing of all precast concrete products; Sign installation, including supporting structure; Spraying of all epoxy, curing compound, or like material; sod layer; Air tool, power tool, and power equipment operator; Asphalt lute man; Asphalt raker man; Batch truck dumper; Bridge handrail erector; Handler (bulk or bag cement); Chain saw man; concrete puddler; concrete rubber; Concrete saw operaator; Core drill operator, eye level; Hand blade; Hydro seeder man; Motor~driven Georgia buggy operator; Power~driven compactor or tamper operator; Power saw operator; Pumpcrete assembly man; Screed man or screw man on asphalt paver;Rebar installer; Sandblaster man; Sealer applicator for asphalt (toxic); Setting and placing prestressed or precast concrete structural members; Side raail setter (for sidewalks, side ditches, radii, and pavements); Spreader box tender (manual

or power~driven); Straw blower man; Subsurface drain and culvert pipe layer; Transverse and longitudinal hand bull float man; Concrete conveyor assembly man; Horizontal boring and Jacking man; Jackman and sheetman; Pipe grade man, Winch and windlass operator.

GROUP 2: Cutting torch burner; Lase beam aligner; Manhole erector; Sewer pipe layer; Water line installer, temporary or permanent; Welder (electric or exy~acetylene) in connection with waterline and sewer work, Hod Carrier (tending bricklayers); TVing and associated grouting of utility lines.

GROUP 3: Air track and wagon drillman; Concrete barrier rail form setter; Dynamite and powder man; General leadman; Concrete Finisher; Transverse and Longitudinal hand Bullfloat man; Concrete Saw Joint Control cutting.

PAIN0027M 06/01/2000

	Rates	Fringes
LAKE COUNTY, West of Highway #41, including HAMMOND area		
GLAZIER	26.20	11.29

---

* PAIN0460C 06/01/2001

	Rates	Fringes
PORTER COUNTY; LAKE COUNTY (Remainder) LA PORTE COUNTY (Remainder)		
PAINTER	22.36	11.04
PAPER/VINYL HANGER	22.61	11.04
DRYWALL TAPING & FINISHING	23.56	11.04
SANDBLASTING, SPRAY PAINTING	23.31	11.04
DRYWALL TAPER, W/AMES TOOLS	23.66	11.04

PAIN0460P 07/01/2000

	Rates	Fringes
LAKE COUNTY (WEST SIDE)		
PAINTERS:		
PAINTERS	23.05	9.50
VINYL - PAPERHANGING	23.30	9.50
SANDBLASTING & SPRAYING	24.00	9.50

PAIN1118A 06/01/2001

	Rates	Fringes
LA PORTE (EASTERN 1/2 INCLUDING MICHIGAN CITY (EAST OF HWY 39) AND ST. JOSEPH COUNTY		
PAINTERS		
Brush & Roller, Drywall Taping and Finishing, Paper Hanging	20.93	5.16
Spray	21.18	5.16

PAIN1165F 06/01/2001

	Rates	Fringes
LAKE (EAST OF HIGHWAY #41 EXCLUDING HAMMOND AREA), LAPORTE and PORTER COUNTIES		
GLAZIERS	24.38	7.89

---

* PAIN1165J 07/01/2001

	Rates	Fringes
ST. JOSEPH		
GLAZIERS	21.17	5.59

---

* PLAS0101D 01/01/2001

	Rates	Fringes
ST. JOSEPH COUNTY		
HEAVY/HIGHWAY		
CEMENT MASONS	22.11	6.70

---

* PLAS0101P 06/01/2001

	Rates	Fringes
ST. JOSEPH COUNTY		
BUILDING CONSTRUCTION		
CEMENT MASONS	19.64	6.45
PLASTERERS	21.26	7.60

PLAS0165A 06/01/2001

	Rates	Fringes
LAKE COUNTY (EXCEPT BY THE NORTHEAST SECTION LYING NORTH OF CROWN POINT AND EAST OF GRIFFITH)		
BUILDING CONSTRUCTION		
CEMENT MASONS	27.95	9.80
PLASTERERS	23.03	8.75
HEAVY & HIGHWAY CONSTRUCTION		
CEMENT MASONS	25.73	8.25

PLAS0406A 06/01/2001

	Rates	Fringes
LAKE COUNTY (NORTHWARD ON LAKE COUNTY LINE TO AND INCLUDING THE CITY OF MERRILLVILLE, BUT NOT THE CITY LIMITS OF CROWN POINT) PORTER COUNTY		
BUILDING CONSTRUCTION		
CEMENT MASONS	27.24	10.50
PLASTERERS	23.93	9.15
HEAVY AND HIGHWAY CONSTRUCTION		
CEMENT MASONS	25.23	8.75

PLAS0438A 06/01/2001

	Rates	Fringes
LAPORTE COUNTY, EASTERN PORTION OF PORTER COUNTY WEST TO BUT NOT INCLUDING CHESTERTON IN THE NORTH AND WEST TO AND INCLUDING KOUTS IN THE SOUTH		
BUILDING CONSTRUCTION		
CEMENT MASONS	27.06	10.50
HEAVY AND HIGHWAY CONSTRUCTION		
CEMENT MASONS	24.67	9.00

PLUM0172P 06/04/2001

	Rates	Fringes

LA PORTE COUNTY (CITY OF LAPORTE)
AND ST. JOSEPH COUNTY

PLUMBER, PIPEFITTER AND STEAMFITTER	24.64	7.45

PLUM0210A 06/01/2001

	Rates	Fringes
LAKE, LAPORTE (Excluding the City of LaPorte) and PORTER COUNTIES		
PLUMBERS	27.71	9.65

PLUM0597D 06/01/2000

	Rates	Fringes
LAKE (Entire County), LA PORTE (Excluding the city of La Porte), PORTER (Entire County)		
PIPEFITTERS	32.70	8.14

ROOF0023P 06/01/2000

	Rates	Fringes
LA PORTE AND ST. JOSEPH COUNTIES		
SLATE & TILE	22.65	6.10
COMPOSITION	22.15	6.10

ROOF0026P 06/01/2001

	Rates	Fringes
LAKE AND PORTER COUNTIES		
ROOFERS	27.41	8.02

SFIN0669A 04/01/2001

	Rates	Fringes
LAKE AND PORTER COUNTIES		
SPRINKLER FITTERS	27.54	6.00

SFIN0669B 04/01/2001

	Rates	Fringes
SPRINKLER FITTERS	26.44	6.00

---

* SHEE0020P 07/01/2001

	Rates	Fringes
ST. JOSEPH COUNTY		
SHEET METAL WORKERS	25.30	9.25

---

* SHEE0020R 07/01/2001

	Rates	Fringes
LAKE, LAPORTE AND PORTER COUNTY		
SHEET METAL WORKERS	27.70	10.83

TEAM0142P 06/01/2001

	Rates	Fringes
BUILDING, HEAVY AND HIGHWAY CONSTRUCTION (EXCLUDING ASPHALT PAVING WORK)		
LAKE AND PORTER COUNTIES		
TRUCK DRIVERS;		
GROUP 1	24.70	6.90
GROUP 2	24.90	6.90
GROUP 3	25.10	6.90
GROUP 4	25.45	6.90
GROUP 5	25.80	6.90
HIGHWAY CONSTRUCTION ASPHALT PAVING WORK		
TRUCK DRIVERS:		
GROUP 1	24.25	6.90
GROUP 2	24.45	6.90
GROUP 3	24.65	6.90
GROUP 4	24.85	6.90
GROUP 5	25.20	6.90
BUILDING, HEAVY & HIGHWAY AND ASPHALT PAVING		

Group 1: 2 and 3 Axle
Group 2: 4 Axle
Group 3: 5 Axle
Group 4: 6 Axle
Group 5: Over 6 Axles

BUILDING CONSTRUCTION ONLY

LAPORTE COUNTY

GROUP 1	14.00	A
GROUP 2	14.10	A
GROUP 3	14.25	A
GROUP 4	14.45	A

GROUP 1 4 Wheel and sheet metal trucks
GROUP 2 6 Wheel and semi trucks
GROUP 3 Winch Trucks
GROUP 4 Mechanics

FOOTNOTE:
A. $123.50 PER WEEK. PER EMPLOYEE

TEAM0364P 06/01/1997

	Rates	Fringes
TRUCK DRIVERS BUILDING CONSTRUCTION:		
ST JOSEPH COUNTY		
TRUCK DRIVERS BUILDING:		
GROUP 1	15.07	a
GROUP 2	15.28	a
GROUP 3	15.36	a
GROUP 4	15.41	a

a. 142.00 Per Week, Per Employee

TRUCK DRIVERS BUILDING CLASSIFICATIONS

GROUP 1: Pickup Trucks
GROUP 2: Single Axle Trucks
GROUP 3: Tandem, Triaxle and Fuel Trucks
GROUP 4: Semi Trailer Trucks

REMAINDING COUNTIES:

TRUCK DRIVERS HEAVY AND HIGHWAY		
GROUP 1	15.12	a
GROUP 2	15.17	a
GROUP 3	15.22	a
GROUP 4	15.27	a
GROUP 5	15.32	a

GROUP 6	15.37	a
GROUP 7	15.42	a
GROUP 8	15.47	a
GROUP 9	15.52	a
GROUP 10	14.97	a
GROUP 11	15.07	a

FOOTNOTE:

a. $162.30+.07 per week, per employee

TRUCK DRIVER HEAVY & HIGHWAY CLASSIFICATIONS

GROUP 1: Single axle straight trucks

GROUP 2: Single axle fuel and water trucks

GROUP 3: Single axle "dog-legs", and tandem truck or dog-legs; Drivers on batch trucks, wet or dry over 3 (34E) batches and tandem axle truck.

GROUP 4: Tandem axle fuel and Tandem axle water trucks; Drivers on Bituminous Distributors, Two-Man.

GROUP 5: Tandem trucks over 15 tons payload; Single axle semi trucks; Farm tractors hauling material; Mixer trucks (all types); trucks pulling tilt-top trailer single axle; single axle lowboys; truck mounted pavement breakers.

GROUP 6: Tandem trucks or "dog-legs"; Semi-water; Sprinkler; Heavy equipment-type water wagons, 5,000 gallons and under;

Drivers on Bituminous Distributors, One-Man.

GROUP 7: Tri-axle trucks; tandem axle semi trucks; Equipment when not self-loaded or pusher loaded, such as Koehring or similar dumpsters, track trucks, Euclid bottom dump and hug bottom dump, tournatrailer, tournarockers, atley wagons, or similar equipment over 12cu. yds.; Mobile mixer trucks; trucks pulling tilt-top trailer tandem axle; Low-boys tandem axle; Tri-axle batch trucks and Tri-axle truck grease and maintenance truck for servicing equipment.

GROUP 8: Tandem-tandem semi trucks; truck mechanics and welders; Heavy equipment type water wagon over 5,000 gallons. Trucks pulling tilt-top trailer tri-axle; Low-boys tandem-tandem axle.

GROUP 9: Low-boys, tandem tri-axle; Acey wagons up to and

including three (3) buckets.

GROUP 10: Pick-up trucks.

GROUP 11: Tenders; Greasers; Tire Men; Batch Board Tenders.

WELDER - Receive rate prescribed for craft performing operation to which welding is incidental
---

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.
==========

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

SECTION 01100

GENERAL PROVISIONS

INDEX

SECTION 01100

GENERAL PROVISIONS

1.1 CERTIFICATES OF COMPLIANCE

Any Certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in two copies. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet specific requirements.

1.2 RESPONSIBILITY OF THE CONTRACTOR

(a) The Contractor shall be responsible for the professional quality, technical accuracy and the coordination of all designs, drawings and specifications furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise designs, drawings and specifications. All corrections or revisions shall be submitted to the Contracting Officer for approval.

(b) Neither the Government's review, approval or acceptance of, nor payment for, any of the services required under this contract shall be construed to operate as a waiver of any rights under this contract, and the Contractor shall be and remains liable to the Government, in accordance with applicable law, for all damages to the Government caused by the Contractor's negligence in connection with designs, drawings and specifications, furnished under this contract.

(c) The rights and remedies of the Government provided for under the contract are in addition to any other rights and remedies provided by law.

1.3 SHOP DRAWINGS

See SECTION 00800 SPECIAL CONTRACT REQUIREMENTS, Paragraph 1.6. Conract Drawings, Maps, and Specifications. The Contractor shall submit to the Contracting Officer for all as-built drawings as described in SECTION 01780 CLOSEOUT SUBMITTALS and SECTION 01451

CONTRACTOR QUALITY CONTROL and six copies of all shop drawings and details as called for under the various headings of these specifications. Five sets of all shop drawings will be retained by the Contracting Officer and one set will be returned to the Contractor.

a. The Contractor shall certify, with each submittal of shop drawings, that he has reviewed the shop drawings in detail and that they are correct in strict conformance with the contract drawings and specifications, except as may be otherwise explicitly stated.

b. Upon completion of the work under this contract, the Contractor shall furnish 2 complete sets of prints of all shop drawings as finally approved. These drawings shall show the changes and revisions made up to the time the contract work is completed and accepted.

1.4 AS-BUILTS. See SECTION 01780.

1.5 REAL ESTATE

The rights-of-way required to complete the cutoff wall construction through the existing CSX Railroad spur easement and the existing BP Amoco/ARCO Oil Recovery system area are not currently available to the Contractor, except as shown and included in the site plan and work limits drawing. The CSX Railroad spur easement * **~~and the BP Amoco/ARCO Oil Recovery system~~** * area will not be available for use by the Contractor until notification by the Contracting Officer.

1.6 NOT USED

1.7 ACCESS ROADS, HAUL ROADS, PARKING, STORAGE, AND CONSTRUCTION AREAS

a. Prior to any hauling or moving of heavy equipment onto the access roads, parking, storage, or construction areas, the Contractor, and any interested parties associated with the project, shall make a field inspection to determine the condition of the respective areas to be used by him. The Contractor will also repair and/or replace the existing property fence, in kind as described in SECTION 02821 SECURITY. The contractor will inspect the existing fencing and gates for repairs and replacement prior to starting construction activities. The Contractor is also responsible for continued operation and maintenance of the fencing through the life of the contract.

b. In the event the Contractor requires any additional access roads, work or storage areas, he shall obtain such areas at his

own expense. The Contractor shall furnish to the Contracting Officer copies of all legal documents or leases permitting his use of private or other properties. The Contractor is responsible for the location, placement, and construction of any additional access roadways or routes on site needed to accomplish the work. The railroad relocation area, test section area, and the BP Amoco/ARCO Oil Recovery System area are off limits for staging and for storage of equipment and supplies.

c. The Contractor shall coordinate with and provide and maintain continuous access to the site for a third party to perform air monitoring activities on-site. ***The Contractor shall maintain the existing North and South side access roads shown on drawing C-02 during the contract work period. If the Contractor's work or other activities encroach upon these access roadways, the roads must be relocated (replaced in kind) to permit continual and safe third party access for air monitoring.*** The air monitoring data is being collected for a long-term study and will be made available for Contractor review upon request to supplement his construction emissions air monitoring (refer to SECTION 01410 ENVIRONMENTAL PROTECTION PLAN, Paragraph 3.1.8, Protection of Air Resources). The Contractor is responsible for maintaining the access roads used by any third party for the air monitoring effort. The Contractor shall also provide vehicle decontamination services for third party, Corps of Engineers, or East Chicago Waterway Management District vehicles that enter and then leave the site. A coordination meeting between the Contractor, the third party, and the Corps of Engineers will be arranged after contract award and prior to the initiation of field activities.

d. The Contractor shall begin the subsurface investigation, inspection, and associated trench work for subsurface obstruction removal and plugging or capping, and the cutoff wall construction at the approximate station of 78+00. The Contractor shall proceed in a clockwise direction around the site (north-east-south-west-north) until the trench work and subsurface obstruction removal and plugging or capping is completed. The trench, subsurface obstruction removal and plugging or capping work shall be completed before the production cutoff wall construction begins except, for possibly, the railroad crossing rights-of-way on the east and the west sides of the project where it may not be possible to complete the investigation trenching and removal activities underneath the existing tracks in the vicinity of stations of 45+00 and 89+00. The trench and obstruction removal work shall be completed for those areas concurrently with the production cutoff wall construction, if necessary. The Contractor shall complete the cutoff wall construction between the approximate stations of 78+00 and 45+00 first, to allow the initiation of the railroad relocation contract.

e. The Contractor shall coordinate with and provide and maintain access to the site for BP Amoco/ARCO and its consultants. The Contractor is responsible for maintaining the access roads used by BP Amoco/ARCO for the operation and maintenance of the existing oil recovery system.* ~~**The Contractor will be notified by the Contracting Officer of the date that BP Amoco/ARCO will decommission the system and permanently remove the equipment from the property.**~~* The Contractor must also provide vehicle decontamination services for BP Amoco/ARCO and its consultants' vehicles that enter and then leave the site. A coordination meeting between the Contractor, BP Amoco/ARCO, its consultants, the East Chicago Waterway Management District and the Corps of Engineers will be arranged after contract award and prior to the initiation of field activities.

f. The railroad relocation shall begin upon completion of the production cutoff wall construction between the approximate stations of 78+00 and 45+00. The Contractor shall not construct the cutoff wall in the area of the railroad right-of-way on the west side of the site (approximately between stations 89+00 and 78+00) until the railroad is relocated or relocated to a point where construction does not interfere with completing the railroad relocation, as authorized by the Contracting Officer. The Contractor could expect as many as two demobilization and remobilization efforts of the inspection trench, obstruction removal, plugging or capping and cutoff wall construction equipment due to the railroad relocation construction.

g. The Contractor shall coordinate with CSX Railroad to minimize any interruptions of railroad service during inspection trench, obstruction removal, plugging or capping activities and construction of the cutoff wall under the railroad crossing (approximately between Stations 45+00 to 43+00). All these activities shall be completed as expeditiously as possible and in accordance with the required timeframe agreed upon by CSX. The Contractor shall be responsible for any necessary warning signs, flagmen, road improvements and safety features required by the railroad.

h. The Contractor shall be responsible for obtaining all permits required by state and local authorities for hauling of materials onto and off of the construction site. The Contractor shall, at his own expense abide by all rules and regulations as required by state and local authorities for use of the haul routes including, but not limited to furnishing signage, flagmen, and road cleaning.

1.8 BARRICADES AND WARNING SIGNS

The Contractor shall provide and maintain barricades, danger and warning signs and suitable and efficient lights at all points of entry to the section or sections of roadway which are to be closed to public travel during construction operations under the contract. The Contractor shall also furnish flagmen and watchmen to warn and direct traffic or to prevent travel on any portion of roadways during the periods in which operations under the contract are performed, as may be required to ensure safety and prevent accidents. All facilities furnished by the Contractor under this paragraph shall be as prescribed by local highway authorities and shall be subject to approval by the Contracting Officer. Traffic control shall be in accordance with the Indiana Manual on Uniform Traffic Control Devices. The Contractor shall coordinate with the CSX Railroad to determine the need for a suitable warning system in regards to the railroad crossing. The Contractor shall be responsible for providing an adequate number of flagmen, or other means as determined by CSX Railroad, to ensure safety and prevent accidents in the area of the railroad crossing. Separate payment will not be made for any costs incurred by the Contractor in compliance with the provisions of this paragraph, but all costs therefor shall be considered as a subsidiary obligation of the Contractor and are included in the contract price for other contract items as applicable.

1.9 ONE CALL SYSTEMS FOR EXCAVATORS

One call systems, established by law, are operated by owners of underground facilities for excavators. Upon notification by an excavator through a one call system, all participating operators of underground facilities in a covered area will identify and locate their facilities. One call systems will be identified by contacting the following:

INDIANA UTILITY CHECK
1-800-428-5200

1.10 ELECTRICAL POWER LINES

The Contractor shall study the construction plans and site and know in detail all locations of power lines within the rights-of-way. Prior to performing any construction operation adjacent to power lines, appropriate danger signs shall be provided where any equipment scheduled for use on the site is capable of contacting such lines. To confirm the location of underground lines, the Contractor shall contact the appropriate council listed in paragraph 1.9, "One Call Systems for Excavators". Aerial power lines shall either be shut off and a positive means taken to prevent the lines from being energized, or clearances required by paragraph 11.E.04. of EM 385-1-1, "Safety and Health Requirements Manual", shall be maintained. In

the area belonging to Northern Indiana Public Service Company (NIPSCO), the electric lines are energized. Work shall not proceed into dangerous areas without an additional workman being assigned to watch the movements of other personnel and equipment to assure that designated clearances are maintained.

1.11 MINIMUM AMOUNT OF INSURANCE REQUIRED

In accordance with FAR 52.228-5, (SECTION 0700) “WORK IN A GOVERNMENT INSTALLATION”, the following minimum insurance coverages and limits are required. The term “Installation” referred to in this clause is deemed to mean Corps of Engineers project site or federal property

a. Evidence of the following minimum insurance coverages and limits, with concurrent policy expiration dates, must be received by the Department of the Army, Corps of Engineers before the Contractor can begin work. This evidence must be on a fully-completed, signed and dated ACCORD Certificate of Insurance. In addition, policy endorsements must be issued by, or in behalf of, the insuring company or companies naming the Department of the Army, Corps of Engineers, the East Chicago Waterway Management District (ECWMD) State of Indiana, Department of Natural resources (DNR), and CSX Transportation, Inc. as Additional Interest Insured regarding the work. The endorsements must also provide that the Department of the Army, Corps of Engineers, ECWMD, and DNR receive direct written notice at least thirty (30) days before the effective date of any material changes to, any cancellation of, or any non-renewal of these coverages during the time period of the Contractor's work.

b. Should the coverages expire or be terminated during the time period of the contractor's work, the Department of the Army, Corps of Engineers must receive an ACCORD Certificate of Insurance as evidence of renewal or replacement insurance coverage and the supporting policy endorsements as specified above.

c. All insuring companies must be rated A, or Superior, by A.M. Best Company, to include A.M. Best identification number, an independent insurance rating service.

Comprehensive General Liability (Occurrence policy form only)	
General Aggregate	$2,000,000
Products/Completed Operations	$2,000,000
Each Occurrence	$1,000,000
Fire Damage Legal Liability	$50,000

Comprehensive Automobile Liability
(Including Hired Automobile Liability

and Non-Owned Automobile Liability)
Combined Single Limit $1,000,000

Employers' Liability
Each Occurrence $500,000
Policy Limit $500,000
Each Employee $500,000
(Or Statutory Limits if higher)

Workers Compensation
(As required by State Law or Federal Law)

Umbrella Liability
(Occurrence policy form only)
Each Occurrence and Aggregate $10,000,000

d. Prior to commencement of work hereunder, the Contractor shall furnish to the Contracting Officer a certificate or written statement of the above required insurance. The policies evidencing required insurance shall contain an endorsement to the effect that cancellation, or any material change in the policies adversely affecting the interests of the Government in such insurance, shall not be effective for such period as may be prescribed by the laws of the State in which the contract is to be performed, and in no event, less than thirty (30) days after written notice thereof to the Contracting Officer.

e. The Contractor agrees to insert the substance of this clause, including this paragraph, in all subcontracts hereunder.

1.12 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

1. This clause specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the CONTRACT CLAUSE entitled "DEFAULT (FIXED-PRICE CONSTRUCTION)." In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied.

(a) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

2. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	1-15	16-31
22	20	21	7	4	3	3	5	3	5	7		3	12

3. Upon acknowledgement of Notice to Proceed (NTP) and continuing throughout the contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day.

4. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delays exceeds the number of days anticipated in paragraph 2, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "Default (Fixed Price Construction)".

1.13 PRESERVATION OF HISTORICAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

If, during construction activities, the Contractor observes items that might have historical or archaeological value, such observations shall be reported immediately to the Contracting Officer so that the appropriate authorities may be notified and a determination can be made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in the destruction of these resources and shall prevent his employees from trespassing on, removing, or otherwise damaging such resources.

1.14 COORDINATION WITH OTHERS

The Contractor shall schedule and coordinate his operations affecting other contractors, Government hired labor forces, utilities, and/or property occurring within the work limits of the project. Such scheduling shall be accomplished with lead time sufficient for coordination with all involved parties as necessary for timely completion of each contract feature, relocation and decommission. As evidence of compliance with this general provision, the Contractor shall furnish the Contracting Officer with a copy of each coordinated schedule prior to commencing operations affecting such other

contractors, utilities, and/or property including, but not limited to, the utility and pipeline owners, the East Chicago Waterway Management District, the City of East Chicago, the CSX Railroad, BP Amoco/ARCO, and the third party for air monitoring.

a. Utility and Pipeline Coordination

1) The U.S. Army Corps of Engineers and the East Chicago Waterway Management District issued a letter to all known utility entities requesting information regarding the location and status of their utilities in the vicinity of the site. The information received has been incorporated into the contract drawings that may not be all-inclusive.

2) The Contractor shall study the construction plans and site and know, in detail, the locations of all utilities not limited to, and including those potentially abandoned and active utilities and pipelines as shown on the plans. Coordination shall commence by contacting and notifying potential utility and pipeline owners that construction activities have commenced. Upon completion of contacting and notifying potential owners, the Contractor shall schedule site visits for the utility and pipeline owners to field survey, stake and mark utility easements, service lines, and service closures points resulting from the ECI/ARCO Refinery demolition and raising operations. Contractor coordination with all utility companies is required prior to initiating subsurface investigations and earthwork activity. A copy of each coordinated schedule shall be furnished to the Contracting Officer for approval.

3) The Contractor shall also be responsible for assuring utility work or relocations of utilities by the owner does not interfere with project activities prior to and during construction once work begins. Additional utility information and guidance is contained in SECTION 00200 INFORMATION AVAILABLE TO BIDDERS and SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL of the specifications.

b. BP Amoco/Atlantic Richfield Company (ARCO)

The Contractor shall develop a Project Construction Management and Operation Plan and a Project Schedule of Work. The Contractor shall coordinate his construction schedule with the Corps to facilitate BP Amoco/ARCO's * **operation** ~~**decommissioning**~~

~~**and permanent removal**~~ ***** of the existing oil recovery system, located between the approximate stations of 00+00 to 20+00,***** ~~**in advance of the inspection trench, obstruction removal and plugging or capping activities in this area. The oil recovery system shall be decommissioned and permanently removed from the site by BP Amoco/ARCO and then the inspection trench, obstruction removal and plugging or capping activities and the cutoff wall installation can then proceed to the south and west of station 20+00**~~**.***

c. CSX Railroad Spur and Relocation

To allow access to the site for construction related to the cutoff wall installation, an unrestricted at-grade crossing is considered necessary across the existing railroad spur line at some location to be determined between the railroad owner and the Contractor. The Contractor shall coordinate with CSX Railroad with regards to the railroad crossings. The Contractor shall not begin work in nor within 25 feet of the existing railroad spur nor the relocated railroad spur without first contacting CSX to identify construction requirements adjacent to the existing and relocated spur. The Contractor shall notify the Contracting Officer 45 days prior to the start of work within 25 feet of the railroad spur. The Contractor is responsible for maintaining the at-grade crossing.

d. Third Party Air Monitors and Monitoring Operations

The Contractor shall coordinate with the third party and shall provide access to the existing air monitors located on the site on the northern, eastern, and western edges of the site. The third party will collect air samples every 6 or 12 days. The Contractor shall perform work in such a manner as to avoid damage to the air monitoring equipment, and must avoid placing diesel equipment in proximity to the air monitors such that the diesel exhaust would contaminate samples. The air monitoring being performed by the third party is independent of any air monitoring required for this contract, and the results of the third party activities will be available to the Contractor upon request. See Sections 01410 ENVIRONMENT PROTECTION and 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTW/UST)for other Contractor air monitoring requirements.

Points of Contact for Potential Utilities

Brian Woodberry
NIPSCO
801 E. 86th Ave.
Merrillville, IN 46410

219-647-4299

David Woodsmall
Marathon
277 Streamwood Drive
Valparaiso, IN 46383
219-477-4001

Randy Thomson
Marathon
1900 West Avenue H
Griffith, IN 46319
219-924-8577

Kevin Connelly
Ameritech
302 South East Street
Crown Point, IN 46307
219-662-4402

Dan Olson
East Chicago Sanitary District
5201 Indianapolis Boulevard
East Chicago IN 46312
219-391-8466

Joe Drozd
East Chicago Water Dept.
400 E. Chicago Avenue
East Chicago IN 46312
219-391-8423

Skip Richards or Larry Malnor
Amoco Pipeline Company
28100 Torch Parkway
Warrenville, IL 60555
630-836-5100

Barry Reminder
Buckeye Pipeline Company
123 Pipeline Drive
Griffith, IN 46319
219-924-6603

John Phelps
Transmontaigne-Pipeline Inc.
200 Mansell Court East, Suite 600
Roswell, GA 30076-4853
770-518-3651

Fred Hipshear
Wolverine
8105 Valleywood Lane
Portage, MI 49024
616-323-2491 x24

David Kalet
BP Whiting Refinery
2815 Indianapolis Blvd.
Mail Code 122
Whiting, IN
46394
219-473-3445

Lisa Bailey
Explorer Pipeline
3737 Michigan Street
Hammond, IN 46323
219-989-8267

Gary Hanten
Phillips Pipeline
400 E. Columbus Drive
East Chicago, IN 46312
219-397-6666 x304

Jim Peiguss
Praxair, Inc.
4520 Kennedy Avenue
East Chicago, IN 46312
219-391-5127

Point of Contact for U.S. Geological Survey

Richard Duwelius
U.S. Geological Survey
5957 Lakeside Blvd.
Indianapolis, IN 46278
317-290-3333, ext. 174

1.15 SPECIAL SAFETY REQUIREMENTS

The Contractor shall comply with all applicable safety requirements as provided in EM 385-1-1 Safety and Health Requirements Manual, 3 September 1996, and SECTION 01351, SAFETY, HEALTH AND EMERGENCY RESPONSE (HTW/UST) of these specifications.

1.16 DISPOSAL OF WASTE

Disposal of debris and contaminated wastes shall be in accordance with individual provisions on the specifications.

1.17 GOVERNMENT FURNISHED BORROW SITE (NOT USED)

1.18 QUANTITY SURVEYS AND INVESTIGATIONS

a. Quantity surveys and investigations shall be conducted in accordance with SECTION 01270 MEASUREMENT AND PAYMENT, SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS AND OBSTRUCTION REMOVAL, SECTION 02210 SUBSURFACE DRILLING, SAMPLING, AND TESTING, and SECTION 02260 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL. The data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.

b. The Contractor shall conduct the original and final survey investigations and inspections for any periods for which progress payments are requested. Original and final surveys shall be done by an independent, registered land surveyor. A representative of the Contracting Officer shall witness all of these surveys, unless the Contracting Officer waives this requirement in a specific instance. There will be a 48-hour notice to the COR/Area Engineer prior to any scheduled survey. The Contractor’s independent surveyor shall make such computations as are necessary to determine the quantities of work performed or finally in place. The Contractor shall make the computations based on the surveys for any periods for which progress payments are requested.

c. Promptly upon completing a survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey, or to the layout of the work, to the Contracting Officer, who shall use them as necessary to determine the amount of progress payments. The Contractor shall retain copies of all such material furnished to the Contracting Officer.

1.19 INSPECTION

The presence or absence of a Government inspector shall not relieve the Contractor of the responsibility for the proper execution of work in accordance with the specifications.

END OF SECTION

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

The purpose of construction is to install a soil-bentonite slurry trench cutoff wall and to remove surface and subsurface obstructions along the alignment of the wall. These Plans and Specifications are based on the installation of a soil-bentonite slurry trench cutoff wall. As discussed in SECTION 00115, PROCEDURES FOR SUBMITTAL OF OFFERS, proposals based on alternate methods of cutoff wall construction will be considered provided that they can meet the specified performance characteristics. It is the responsibility of the Offeror of a proposed alternate cutoff wall method to meet the submittal requirements of SECTION 00115.

The cutoff wall is the first of two elements required for the Indiana Harbor and Canal CDF project Groundwater Protection System. The second element, a groundwater extraction system, is not part of this contract.

1.1 SCOPE

This construction project may require handling hazardous and toxic waste (HTW) defined under the Resource Conservation and Recovery Act (RCRA) or the Toxic Substances Control Act (TSCA). This project requires subsurface investigation and obstruction removal in order to construct the soil-bentonite slurry trench cutoff wall. Investigations shall be performed to locate, identify, inspect, and remove all obstructions that would prevent installation of the cutoff wall. The following types of obstructions have been encountered during previous drilling and excavation activities:

- Building/construction debris from razing of previous on-site facilities
- Refinery process pipelines, gas lines, and electric conduits
- Storm sewers, water lines, and sanitary sewers
- Underground storage tanks
- Concrete foundations and reinforced concrete slabs
- Abandoned dock wall steel sheet pile, H-pile, and/or timber vertical or batter piles
- Abandoned drainage, outfall, and settling basin structures
- Railroad tracks and railroad ties

The investigation includes inspection trenching along the cutoff wall alignment to a depth of 15 feet and soil borings along the cutoff wall alignment. The soil borings, obstruction investigation, inspection, and removal work, including well decommissioning, shall be performed in phases and completed prior to the installation of the cutoff wall. Laboratory chemical compatibility testing shall be conducted to determine a suitable slurry mix design for the cutoff wall. The chemical compatibility testing shall start after the completion of the soil borings. The compatibility testing must be completed and approved prior to the construction of the test section. The cutoff wall test section shall be constructed and approved prior to the beginning of construction of the production cutoff wall. All obstruction investigation, inspection, and removal work shall also be completed prior to the installation of the production cutoff wall. A dewatering process system shall be installed on the property to treat the liquid from the: inspection trench dewatering, pumping of the test section, sampling of the wells as part of the compatibility testing, and other activities. An oil boom system shall be installed to collect free product that may seep from the southern end of the property into the canal. Air monitoring shall be conducted for documentation and work control purposes. The Contractor shall develop a Project Construction Management and Operation Plan and a Project Schedule of Work. The Contractor shall coordinate with other project contractors and subcontractors to perform and complete this job. The coordination includes the CSX Railroad spur relocation, U.S. Geological Survey perimeter air monitoring, local utility and pipeline owner activities, and the existing oil/water recovery system (BP Amoco/ARCO) operation *** ~~and eventual removal~~ *.**

1.2 SUBMITTALS

Government approval is required for submittals with a “GA” designation; submittals having an “FIO” designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES.

SD-01 Data

Project Construction Management and Operation Plan; GA

This plan will include a detailed description of the Contractor’s method and sequence of activities to locate and remove all surface and subsurface obstructions, the method and sequence of activities to construct the test section and

production cutoff wall, and the methods for accomplishing other required project activities, including soil borings, chemical compatibility testing, well decommissioning, perimeter air monitoring, the dewatering process system, and the oil boom system. The Contractor will define the relationship of all work plans required for this project and described in the specifications, and will describe the relationship between work elements and work plans in the Project Construction Management and Operation (PCMO) Plan. The Contractor will address work plan consistency issues in the PCMO plan. The PCMO plan will be submitted within, and not more than 60 days after Notice to Proceed.

Project Schedule; GA

A Project Construction Schedule of Work shall be provided based on the methods and sequence of activities provided in the Project Construction Management and Operation Plan. The Contractor shall submit a Construction Schedule as required by Section 00700 - CONTRACT CLAUSES. The Contractor shall provide a critical path construction schedule depicting start dates, task durations, and end dates for all components of the contract including submittals and submittal review periods, installation of security fencing, installation of the dewatering process and oil boom systems, soil borings, chemical compatibility testing, trenching and obstruction removal, decommissioning of wells, construction and testing of the test section, production slurry wall construction, crossing of the existing CSX railroad spur easements, coordination with the existing ARCO oil recovery system removal, off-site waste disposal, cleanup, and submittal of project records. In addition, the Contractor shall provide a schedule of monthly projection of earnings as part of the Schedule of Work. The schedule shall use the Notice to Proceed as the start date. The initial Project Schedule will be submitted within, and not more than 60 days after Notice to Proceed. The contractor will update the Schedule of Work on a monthly basis and submit it to the Contracting Officer’s Representative.

PART 2 PROJECT FEATURES AND PRODUCTS

The major project features and products for this contract include:

a. Site preparation, access, contractor coordination and security fencing

b. Dewatering process (oil/water separator) and oil boom system installation, operation, and maintenance
c. Perimeter air monitoring
d. Soil borings along the alignment of the cutoff wall
e. Chemical compatibility testing
f. Test section construction
g. Investigations including inspection trenching, obstruction location and removal
h. Well and piezometer decommissioning
i. Soil-bentonite slurry trench cutoff wall construction

PART 3 EXECUTION

3.1 OBJECTIVE

The Contractor shall complete all work in accordance with the specifications, technical provisions, and requirements for this contract. Construction activities for the cutoff wall installation and the railroad relocation shall be sequenced to minimize disruption of railroad service while allowing the cutoff wall installation to proceed in an efficient manner. The existing BP AMOCO/ARCO oil recovery system will remain operational *** during the contract period~~. for the maximum possible duration prior to decommissioning and removal from the site (by others under separate contract)~~.***

3.2 CONSTRUCTION SEQUENCE AND PHASE OF WORK REQUIREMENTS

3.2.1 Commencement of Work

The Contractor may not begin field work until the appropriate submittals have been received and approved. During background perimeter air monitoring, no earth disturbing activities may occur on the site. The Contractor may not begin earth disturbing work until the oil boom, dewatering process system, security fencing, and erosion control are in place. The Contractor may not begin construction of the test section until after the laboratory compatibility testing is complete and approved. The Contractor will follow the approved project schedule, described in the submittal requirements for this section.

3.2.2 On Site Construction

To allow access to the site for construction related to the cutoff wall installation, the Contractor shall install an unrestricted grade crossing across the existing railroad spur line at some location to be determined between the railroad

owner and the Contractor. This crossing will provide a significantly more efficient working area for the construction contractor by eliminating the need to decontaminate equipment moving from the northern portion of the site to the south and back. Also, a conduit may be needed under the tracks as part of the crossing, if desired by the construction contractor in order to position the dewatering process system that is a part of the work. Any discharge liquid generated from the inspection trench dewatering, test section pumping, compatibility testing sampling, well decommissioning, cutoff wall installation, and other activities will need to be routed through the dewatering process system.

3.2.3 Survey Obstruction Investigation, Inspection, and Removal

The inspection trench work cannot begin until the Contractor has an approved and operational dewatering process system on site. The dewatering process system must be installed prior to excavation activities and must be maintained until closure of the cutoff wall is accomplished. The survey investigation and inspection trench work should begin as soon as possible after the NTP. This work shall begin at approximately STA. 78+00 and proceed in a clockwise direction around the site (north-east-south- ***** **west** ***** -north). ***** ~~**Three**~~ **Two** ***** areas of the site may require work out of sequence, and on-site or off-site remobilization. The ***** ~~**three**~~ **two** ***** areas are: the East Railroad crossing, at approximately stations 43+00 to 45+00; ***** **and** ***** the West Railroad crossing, at approximately stations 76+00 to 89+00 ***~~; and the BP Amoco/Arco oil recovery process area, at approximately stations 0+00 to 20+00~~**. *****

3.2.4 Cutoff Wall Installation

Soil borings must be completed along the cutoff wall alignment prior to the start of the compatibility testing. The compatibility testing, test section, inspection trench, and obstruction removal must be completed prior to the start of the production cutoff wall. The installation of the cutoff wall will require the crossing of a railroad spur line that crosses the CDF site at two locations. The west railroad crossing (approximately STA. 76+00 to 89+00) will be relocated (by others) as part of the overall railroad relocation plan on the west side of the site, while the east railroad crossing (approximately STA. 43+00 to 45+00) at Indianapolis Boulevard will require a shutdown in rail service. To take advantage of the relocation of the first crossing, the cutoff wall contractor will be instructed to begin wall installation at approximately

STA. 78+00 and proceed in a clockwise direction around the site (north-east-south-* ~~west~~ *-north).

3.2.4.1 Indianapolis Blvd. Railroad Crossing

The east railroad crossing is located at approximately STA. 43+00 to 45+00. A single line of track, approximately 50 feet, will need to be temporarily taken out of service for approximately 2 weeks each for the inspection trench and cutoff wall installation. The track removal and replacement will be done by the railroad; the Contractor must coordinate with the railroad on work timing.

3.2.4.2 Railroad Relocation

The railroad relocation contract (by others) could be ready to begin construction as early as February 2002, starting at approximately STA. 78+00. The track length to be relocated is approximately 3000 feet and may take approximately 4 months to complete. In the event that the railroad relocation cannot be completed in time, the cutoff wall contractor will need to stop at approximately STA. 89+00 and wait to complete the final approximately 1100 feet of cutoff wall.

3.2.4.3 BP Amoco/ARCO * ~~Decommissioning~~ **Oil Recovery System** *

From Station 78+00, the cutoff wall installation will proceed north, east, and then south to approximately STA. 20+00. This is considered the farthest that work can proceed while the existing BP Amoco/ARCO Oil Recovery System is in operation. The oil recovery system * **shall remain in place for the duration of this contract** ~~. be decommissioned and permanently removed from the site by BP Amoco/ARCO before the cutoff wall installation can then proceed south past this point~~. *

END OF SECTION

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 LUMP SUM PAYMENT ITEMS

Payment items for performing and completing work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, equipment, and any associated Contractor quality control, environmental protection, safety equipment and personal protective equipment (PPE), tests and reports, and all work required for which separate payment is not otherwise provided. The Contractor shall submit for approval by the Contracting Officer a proposed price breakdown for all lump sum bid items. The contractor is responsible for determining the level of PPE and including the cost in the lump sum. No additional compensation will be made for changes in PPE requirements during the life of the project.

1.1.1 Mobilization and Demobilization (Bid Item 0001)

1.1.1.1 Payment

Payment at the applicable lump sum price shall include all costs for mobilization and demobilization of all the Contractor’s plant and equipment to perform the base Bid Items (0001 through ***0017)*.** Payment constitutes full compensation for all plant, labor, equipment, and incidentals associated with mobilization and demobilization.

1.1.1.2 Unit of Measurement

Unit of measure: lump sum (LS)

1.1.2 Temporary Field Office, Project, and Warning Signs (Bid Item 0002)

1.1.2.1 Payment

Payment at the contract lump sum price will be made for the temporary field office, project signs, warning and safety signs for the project site, and all associated costs as defined in SECTION 01580 TEMPORARY FIELD OFFICE, PROJECT AND WARNING SIGNS. Payment constitutes full compensation for all plant, labor, equipment, materials, and incidentals associated with performing and completing this work.

1.1.2.2 Unit of Measure

Unit of measure: Lump Sum (LS)

1.1.3 Dewatering Process System (Bid Item 0006), Installation (Bid Item 0006AA)

1.1.3.1 Payment

Payment shall be made at the contract lump sum price for selecting, installing, starting up, and testing the dewatering process system. Payment shall also include removal of the system at the end of the contract. SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS and SECTION 11500 OIL/WATER SEPARATOR PROCESS EQUIPMENT describe the system. Payment shall constitute full compensation for all plant, labor, equipment, materials, and incidentals necessary to perform and complete the installation work.

1.1.3.2 Unit of Measurement

Unit of measure: Lump Sum (LS)

1.1.4 Oil Boom System (Bid Item 0007), Installation (Bid Item 0007AA)

1.1.4.1 Payment

Payment shall be made at the contract lump sum price for selecting and installing the oil boom system including equipment, materials, and supplies as described in SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEM. Payment shall constitute full compensation for all costs associated with equipment, labor, material, and incidentals necessary to perform and complete the oil boom system installation.

1.1.4.2 Unit of Measurement

Unit of measure: Lump Sum (LS)

1.1.5 Erosion Control (Bid Item 0011)

1.1.5.1 Payment

Payment at the contract lump sum price will be made for costs associated with the erosion control plan and general NPDES permit approval, equipment, material, inspection, maintenance, and construction of erosion control features for the ECI site, including erosion control around on-site stockpiles and cutoff wall work platforms. Refer to SECTION 01356 STORM WATER POLLUTION PREVENTION MEASURES and SECTION 01410 ENVIRONMENTAL PROTECTION for a description of the work. Payment shall constitute full compensation for all plant, labor, equipment, material, and incidentals necessary and required to perform and complete the work.

1.1.5.2 Unit of Measure

Unit of measure: Lump Sum (LS)

1.1.6 Test Section(s) Installation, Sampling, and Testing (Bid Item 0013)

1.1.6.1 Payment

The test section or sections will be measured as one unit regardless of the number of test sections performed, with payment contingent upon the acceptance of the Test Section Compliance Report as discussed in SECTION 02260 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL. Payment for the test section shall be made at the contract lump sum price. Such price will include all costs associated with constructing the test section(s) as shown on the Drawings. This includes determination of the cutoff wall cross section; determination of the slurry and backfill mixes; inspection trenching; abandoned pipeline removal and plugging or capping; obstruction removal; work platform construction; cutoff wall construction by the soil-bentonite slurry trench method; observation and pumping well construction including soil sampling and testing; pumping of the test section; monitoring of the observation wells during the recovery phase of the test; drilling soil borings along the test section alignment prior to and after completion of the cutoff wall; test section compliance report preparation; decommissioning of test section wells; and all other items incidental to the construction and successful completion of the test section that meet or exceed the project specification requirements. If a

test section fails and is abandoned in favor of a new test section location, then any wells installed by the contractor shall be decommissioned per SECTION 02101 DECOMMISSIONING WELLS. No separate payment will be made for decommissioning any wells installed as part of the test section(s).

Area(s) of the test section walls that fail to meet the permeability requirement (i.e., samples of the soil-bentonite backfill shall have a permeability of no more than $1x10^{-7}$ cm/sec) shall be removed to the location of the nearest passing test and replaced. It is noted that acceptable soil-bentonite backfill (i.e., which had a permeability less than $1x10^{-7}$ cm/sec) may need to be removed in order to remove the batch(es) of soil-bentonite backfill that had failed. All necessary repairs to the wall shall be made at no cost to the Government.

1.1.6.2 Unit of Measure

Unit of measure: Lump Sum (LS)

1.1.7 Fencing Installation Operation & Maintenance (Bid Item 0015)

1.1.7.1 Payment

Payment shall be made at the contract lump sum price for in kind repair and/or replacement, installation, operation and maintenance for the existing property fencing and gates as defined in SECTION 02821 SECURITY. Payment shall include removal and on-site stockpiling of the existing fencing and materials as shown on the contract drawings, designated location, and layout. No separate payment shall be made for costs associated with the removal, transport, handling, and on-site stockpiling of the existing fence and continued maintenance and repair of new fencing, parts and materials. Payment shall constitute full compensation for all plant, labor, materials, handling, quality control, site preparation, existing fence inspection and incidentals necessary and required to complete the work.

1.1.7.2 Unit of Measurement

Unit of measure: Lump Sum (LS)

1.2 UNIT PRICE PAYMENT ITEMS

Payment items for the performance and completion of work in this contract for which contract unit price payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular unit price item, shall be included in the listed unit price item most closely associated with the work involved. The unit price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, equipment, and any associated Contractor quality control, environmental protection, safety equipment and personal protective equipment (PPE), tests and reports required for each of the unit price items. The contractor is responsible for determining the level of PPE and including the cost in the unit price. No additional compensation will be made for changes in PPE requirements during the life of the project.

1.2.1 Clearing and Grubbing (Bid Item 0003)

1.2.1.1 Payment

Payment will be made at the contract unit price for clearing and grubbing the project site as defined in SECTION 02110 CLEARING AND GRUBBING, and shall constitute full compensation for all plant, labor, equipment, materials, handling, transporting, on-site stockpiling, and incidentals necessary to complete the work. The refilling of holes resulting from clearing and grubbing operations will not be measured for payment but will be considered as a subsidiary obligation under the above item.

1.2.1.2 Unit of Measure

Unit of measure: Acres (AC)

1.2.2 Construction Emissions Air Monitoring (Bid Item 0005); *** NIOSH 1501 Samples (Bid Items 0005AA and 0005AB), NIOSH 5503 Samples (Bid Items 0005BA and 0005BB), Real-time Construction Emissions Monitoring (Bid Items 0005CA) *.**

1.2.2.1 Payment

Payment shall be made at the contract unit price for construction emissions air monitoring, including air monitoring and meteorological equipment; sampling, analytical testing, and reporting, including Quality Assurance/Quality Control (QA/QC); and equipment maintenance. Construction emissions monitoring

shall consist of low-volume air samples daily for Benzene and PCBs analysis utilizing NIOSH Methods, in conjunction with real-time monitoring for volatile emissions and particulates. Sample quantities referenced here are for NIOSH method analyses. ***~~"Each" sample to be collected refers to a pair of samples; one NIOSH 1501 sample and one NIOSH 5503 sample~~. ~~No separate payment will be made for real-time monitoring.~~ The costs incurred for real-time monitoring shall be included within the contract unit cost for Items 0005CA of the Bid Schedule. ~~The real time monitoring is incidental to the cutoff wall, trenching, and other construction activities~~.*** Payment shall constitute full compensation for all labor, materials, equipment, sample analysis, power supply, and all other incidentals necessary to perform and complete the work. Refer to SECTION 01410 ENVIRONMENTAL PROTECTION for more details on the monitoring activities.

1.2.2.2 Unit of Measurement

Measurement ***for NIOSH sampling*** shall be based on each sample collected and analyzed. ***~~Each sample to be collected refers to a pair of samples; one NIOSH 1501 sample and one NIOSH 5503 sample~~.* Measurement for real-time monitoring**

Unit of measure: Each (EA) ***for Bid Items 0005AA, AB, BA, and BB. Lump Sum (LS) for Bid Item 0005CA. ***

1.2.3 Decommission Wells and Piezometers (Bid Item 0004)

1.2.3.1 Payment

Payment will be made at the contract unit price for decommissioning existing wells and piezometers. Price shall include costs associated with the proper closure of the wells as defined in SECTION 02101 DECOMMISSIONING WELLS. Payment shall constitute full compensation for all plant, labor, equipment, materials, handling and cleaning, quality control testing, record keeping, water level measurements, site preparation, and incidentals necessary to complete the work. No separate payment will be made for decommissioning wells installed as part of any failed test sections(s). Payment for decommissioning any wells installed as part of the test section(s) is included in the payment for the Bid Item 0012.

1.2.3.2 Unit of Measure

Unit of measure: Each (EA)

1.2.4 Dewatering Process System (Bid Item 0006), Operation and Maintenance (Bid Item 0006AB)

1.2.4.1 Payment

Payment shall be made at the contract unit price for the dewatering process system operation and maintenance. Payment shall constitute full compensation for all plant, labor, equipment, materials, and incidentals necessary to perform and complete the work.

1.2.4.2 Unit of Measure

Unit of measure: Monthly (MO)

1.2.5 Oil Boom System (0007), Operation and Maintenance (Bid Item 0007AB)

1.2.5.1 Payment

Payment shall be made at the contract unit price for inspection, operation and maintenance of the oil boom as described in SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEM. Payment includes all costs associated with equipment, labor, materials, and incidentals necessary to operate and maintain the oil boom system. Operation and maintenance may include replacing all or part of the oil boom during the life of the contract, as needed to maintain a working boom.

1.2.5.2 Unit of Measurement

Unit of measure: Monthly (MO)

1.2.6 Free Product Storage, Transportation, and Disposal (Bid Item 0008)

1.2.6.1 Payment

Payment at the contract unit price for free product storage, sampling, characterization, transport, and off-site disposal as defined in SECTION 01410 ENVIRONMENTAL PROTECTION; SECTION 02120 STORAGE, TRANSPORTATION, AND DISPOSAL OF HAZARDOUS MATERIAL AND FREE PRODUCT WASTES; SECTION 02150 DEWATERING OIL WATER PROCESS AND OIL BOOM SYSTEMS, ***and SECTION 02215 SURVEY INVESTIGATION, INSPECTION, AND OBSTRUCTION REMOVAL. *** Payment shall constitute full compensation for all plant, labor, materials, and

incidentals necessary to perform and complete the work. Unit price includes disposal of all free product regardless of characterization as hazardous, TSCA, or waste oil.

1.2.6.2 Unit of Measurement

Unit of measure: Gallon (GAL)

1.2.7 Obstruction Investigation and Inspection Trench (Bid Item 0009)

1.2.7.1 Payment

Payment at the contract unit price will be made for costs associated with all site work for inspection trenching including obstruction location, control surveys, field verification, excavation and backfill, and mapping of all surface and subsurface obstructions in the cutoff wall alignment and adjacent tolerances, including control and verification surveys required for pre- and post- cutoff wall installation and construction. Payment shall be made for all work as defined in SECTION 02215 SURVEY INVESTIGATIONS INSPECTIONS AND OBSTRUCTION REMOVAL; SECTION 02260 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL; and SECTION 02115 UNDERGROUND STORAGE TANK REMOVAL. No separate payment shall be made for furnishing, placing and removing any necessary shoring or bracing, trench boxes, excavation dewatering, and associated incidentals. *** The cost for terminating and backfilling the inspection trench, marking the location of the active utility, skipping over the active utility, and continuing with the trench on the other side of the active utility shall be incidental to the cost of the inspection trench. *** Payment shall constitute full compensation for all plant, labor, equipment, material and any other incidentals necessary to perform and complete the work required regardless of the number of obstructions encountered.

Should any or all of the excluded areas covered by Bid Option Items ***** ~~**0017AA, ***~~ 0018AA, and 0019AA become available prior to the required inspection trench construction physically reaching the excluded areas, the appropriate Bid Option Items will not be exercised, and the Contractor will be paid for completing those areas under Bid Item 0009.

1.2.7.2 Unit of Measure

Measurement shall be made along the centerline of the proposed cutoff wall.

The quantity in the base bid item does not include installing the trench at the locations described in Bid Options *** 0018, and 0019.*** Should any or all of the excluded areas covered by Bid Option Items ***** ~~**0017AA**~~**,*** 0018AA, and 0019AA become available prior to the required inspection trench construction physically reaching the excluded areas, the appropriate Bid Option Items will not be exercised, and the work performed in the excluded areas shall be measured under Bid Item 0009. Quantities added to Bid Item 0009 in this manner will not be considered under the VARIATIONS IN ESTIMATED QUANTITIES clause for Bid Item 0010.

Unit of measure: Lineal Feet (LF)

1.2.8 Obstruction Removal and Plugging or Capping (Bid Item 0010), Abandoned Sewer Pipelines (Bid Items 0010AA and 0010AB)

1.2.8.1 Payment

Payment shall be made at the contract unit price for excavating, removing, and plugging or capping all subsurface, abandoned sewer pipelines (sanitary or storm) that run through and/or in the cutoff wall alignment. Payment shall be at the unit price regardless of the pipe diameter. See Attachment 00200-A Summary of Utility & Pipeline Sizes. Refer to SECTION 02115 UNDERGROUND STORAGE TANK REMOVAL and SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL. Payment for handling, transporting, and on-site stockpiling of the cut sections shall be made under Bid Item 0010AK or 0010AL. No separate payment shall be made for furnishing, placing, and removing any necessary shoring, bracing, trench boxes excavation dewatering, and associated incidentals. Payment shall constitute full compensation for all labor, materials, equipment, and incidentals necessary and required to perform and complete the work.

1.2.8.2 Unit of Measurement

Measurement shall be based on the number of abandoned sanitary and storm sewer pipelines that cross and/or in the cutoff wall alignment and allowable tolerance to complete the work.

Unit of measure: Each (EA)

1.2.9 Obstruction Removal and Plugging or Capping (Bid Item 0010), Abandoned Water Pipelines (Bid Items 0010AC and 0010AD)

1.2.9.1 Payment

Payment shall be made at the contract unit price for excavating, removing, and plugging or capping all subsurface, abandoned water pipelines that run through and/or in the cutoff wall alignment. Payment shall be at the unit price regardless of the pipe diameter. See Attachment 00200-A Summary of Utility & Pipeline Sizes. Refer to SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL. Payment for handling, transporting, and on-site stockpiling of the cut sections shall be made under Bid Item 0010AK or 0010AL. No separate payment shall be made for furnishing, placing, and removing any necessary shoring, bracing, trench boxes, excavation dewatering, and associated incidentals. Payment shall constitute full compensation for all plant, labor, materials, equipment, and incidentals necessary and required to perform and complete the work.

1.2.9.2 Unit of Measurement

Measurement shall be based on the number of abandoned water pipelines that cross and/or in the cutoff wall alignment and allowable tolerances to complete the work.

Unit of measure: Each (EA)

1.2.10 Obstruction Removal and Plugging or Capping (Bid Item 0010), Abandoned Petroleum Pipelines (Bid Items 0010AE and 0010AF)

1.2.10.1 Payment

Payment shall be made at the contract unit price for excavating, removing, and plugging or capping subsurface, abandoned petroleum pipelines that run through and/or in the cutoff wall alignment. Payment shall be at the unit price regardless of the pipe diameter. See Attachment 00200-A Summary of Utility & Pipeline Sizes. Refer to SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL and SECTION 02115 UNDERGROUND STORAGE TANK REMOVAL. Payment for handling, transporting, and on-site stockpiling of the cut sections shall be made under Bid Item 0010AK or 0010AL. No separate payment shall be made for furnishing, placing, and removing any necessary shoring, bracing, trench boxes, excavation dewatering, and associated incidentals. Payment shall constitute full compensation for all plant, labor, materials, equipment, and incidentals necessary and required to perform and complete the

work.

1.2.10.2 Unit of Measurement

Measurement shall be based on the number of abandoned petroleum pipelines that cross or may be in the cutoff wall alignment and allowable tolerances to complete the work.

Unit of measure: Each (EA)

1.2.11 Obstruction Removal and Plugging or Capping (Bid Item 0010), Miscellaneous Pipelines (Bid Items 0010AG and 0010AH)

1.2.11.1 Payment

Payment shall be made at the contract unit price for excavating, removing, and plugging or capping abandoned, miscellaneous pipelines of unknown service that run through and/or in the cutoff wall alignment. Payment shall be at the unit price regardless of the pipe diameter. See Attachment 00200-A Summary of Utility & Pipeline Sizes. Refer to SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS AND OBSTRUCTION REMOVAL and SECTION 02115 UNDERGROUND STORAGE TANK REMOVAL. Payment for handling, transporting, and on-site stockpiling of the cut sections shall be made under Bid Item 0010AK or 0010AL. No separate payment shall be made for furnishing, placing, and removing any necessary shoring, bracing, trench boxes, excavation dewatering, and associated incidentals. Payment shall constitute full compensation for all plant, labor, materials, equipment, and incidentals necessary and required to perform and complete the work.

1.2.11.2 Unit of Measurement

Measurement shall be based on the number of miscellaneous pipelines that cross or may be in the cutoff wall alignment and allowable tolerances to complete the work.

Unit of measure: Each (EA)

1.2.12 Obstruction Removal and Plugging or Capping (Bid Item 0010), Electrical Power Line/Conduit Termination and Removal (Bid Items 0010AI and 0010AJ)

1.2.12.1 Payment

Payment shall be made at the contract unit price for excavation, removal, and termination of abandoned electrical power lines and/or conduits that run through and/or in the cutoff wall alignment. Payment shall be at the unit price regardless of the diameter. See Attachment 00200-A Summary of Utility & Pipeline Sizes. Refer to SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL. Payment for handling, transporting, and on-site stockpiling of the cut sections shall be made under Bid Item 0010AK or 0010AL. No separate payment shall be made for furnishing, placing, and removing any necessary shoring, bracing, trench boxes, excavation dewatering, and associated incidentals. Payment shall constitute full compensation for all plant, labor, materials, equipment, and incidentals necessary and required to perform and complete the work.

1.2.12.2 Unit of Measurement

Measurement shall be based on the number of electrical power lines and conduits that cross or may be in the cutoff wall alignment and allowable tolerances to complete the work.

Unit of measure: Each (EA)

1.2.13 Obstruction Removal and Plugging or Capping (Bid Item 0010), Other Obstruction Removal (Bid Items 0010AK and 0010AL)

1.2.13.1 Payment

Payment shall be made at the contract unit price for excavating and removing other obstructions in the cutoff wall alignment and allowable tolerance as described in SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL. This bid item applies to subsurface obstructions including, but not limited to, post demolition debris, concrete slabs and foundations, bricks, stones, wood, metal debris, construction debris, and unsatisfactory material as defined in SECTION 02215. Payment shall include cost for handling, transporting, and on-site stockpiling of the obstructions described in this bid item along with the material to be stockpiled from Bid Item 0010. Payment shall include cost of providing a scale as described in SECTION 02215. No separate payment shall be made for excavating and stockpiling frozen soils. No separate payment shall be made for furnishing, placing, and removing any necessary shoring, bracing, trench boxes, excavation dewatering, and associated incidentals. No separate payment shall be made for the removal and stockpiling of items covered in SECTION 02110 CLEARING AND

GRUBBING. Payment shall constitute full compensation for all plant, labor, materials, equipment, and incidentals necessary and required to perform and complete the work.

1.2.13.2 Unit of Measurement

Measurement will be based upon print outs received from the on-site certified scale, as approved by the Contracting Officer.

Unit of measure: Tons (TON)

1.2.14 Obstruction Removal and Plugging or Capping (Bid Item 0010), Underground Storage Tank Removal (Bid Items 0010AM and 0010AN)

1.2.14.1 Payment

Payment shall be made at the contract unit price for excavating, purging, cleaning, and removing underground storage tanks (USTs) and connected piping in the cutoff wall alignment and allowable tolerance. Payment shall be at the unit price, regardless of the tank size. The maximum tank size expected is 20,000 gallons. Refer to SECTION 02115 UNDERGROUND STORAGE TANK REMOVAL; SECTION 02120 STORAGE, TRANSPORTATION, AND DISPOSAL OF HAZARDOUS MATERIAL AND FREE PRODUCT WASTES; and SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL. Payment for handling, transporting, and on-site stockpiling of the UST shall be made under Bid Item 0010AK or 0010AL. No separate payment shall be made for furnishing, placing, and removing any necessary shoring bracing, trench boxes, excavation dewatering, and associated incidentals. Payment shall constitute full compensation for all plant, labor, materials, equipment, and incidentals necessary and required to perform and complete the work.

1.2.14.2 Unit of Measurement

Measurement shall be based on the number of USTs in the cutoff wall alignment and allowable tolerance.

Unit of measure: Each (EA)

1.2.15 Obstruction Removal and Plugging or Capping (Bid Item 0010), Removal of Steel Sheet Pile Wall (Bid items 0010AO and 0010AP)

1.2.15.1 Payment

Payment shall be made at the contract unit price for excavation and removal of portions of the steel sheet pile wall and batter piles that run through and/or in the cutoff wall alignment. As shown in Drawing R-02, Canal Steel Sheet Pile Bulkhead (dated 1/21/60), a portion of the steel sheet pile that may be removed is located in the southwest corner of the site. *** Sheet pile walls may also run through or cross the cutoff wall alignment in other locations of the site; this bid item is applicable to removal at the other locations as well. Payment for handling, transporting, and on-site stockpiling of the sheet pile and H-pile sections shall be made under Bid Item 0010AK or 0010AL.*** No separate payment shall be made for furnishing, placing, and removing any necessary shoring or bracing, trench boxes, excavation dewatering and associated incidentals. Payment shall constitute full compensation for all plant, labor, materials, equipment and incidentals necessary and required to perform and complete the work.

1.2.15.2 Unit of Measurement

Measurement shall be based on the number of steel sheet pile walls that cross or are in the cutoff wall alignment and allowable tolerance.

Unit of measure: Each (EA)

1.2.16 Obstruction Removal and Plugging or Capping (Bid Item 0010), Temporary Termination & Restart of Cutoff Wall During Active Utility or Pipeline Relocations (Bid Items 0010AQ and 0010AR)

1.2.16.1 Payment

Payment shall be made at the contract unit price for temporary termination of the cutoff wall, skipping over the active utility, starting the cutoff wall on the other side of the active utility, and returning to complete the cutoff wall installation after the active utility/pipeline has been removed. This applies to each of the live utility/pipeline relocations required within the cutoff wall alignment, as described in SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL. Payment shall constitute full compensation for all plant, labor, materials, equipment, and incidentals necessary and required to perform and complete the work.

Price shall include costs associated with the cutoff wall installation; construction of work platforms; removing and replacing area(s) of the adjacent production wall that are not full depth; excavating soil by the slurry method of excavation for constructing the soil-bentonite slurry cutoff wall; cleaning the trench bottom; stockpiling of any excess satisfactory excavated materials; mixing, blending, and placing the cutoff wall backfill; construction of the cutoff wall cap and all required testing. Refer to SECTION 02260 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL for more details on the work activities.

No separate payment will be made for work platform design, construction, grading, excavation, or fill that is necessary for the stability of the trench or required as the result of constructing a work platform for the convenience to the contractor. No payment shall be made for excavating previously placed soil-bentonite backfill, nor shall any payment be made for runout sections that are not full depth.

1.2.16.2 Unit of Measurement

Unit of measure: Each (EA)

1.2.17 Cutoff Wall Installation (Bid Item 0012)

1.2.17.1 Payment

Payment at the contract unit price will be made for costs associated with the cutoff wall installation, including determination of the cutoff wall cross-section; determination of the slurry and backfill mixes; chemical compatibility testing; importing of any necessary off-site borrow as a source of supplemental fines; construction and removal of work platforms; excavating soil by the slurry method of excavation for constructing the soil-bentonite slurry cutoff wall; cleaning the trench bottom; stockpiling of any excess satisfactory excavated materials; mixing, blending, and placing the cutoff wall backfill; construction of the cutoff wall cap;*** design and installation of measures employed to achieve a vertical end at each of the the cutoff wall end sections ***; and all required testing. Refer to SECTION 02260 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL for more detail on the work activities. Payment for the cutoff wall shall constitute full compensation for all plant, labor, equipment, materials, and incidentals associated with performance and completion of the work. Area(s) of the production walls that fail to meet the permeability requirement (i.e., that samples of the soil-bentonite backfill shall have a

permeability of no more than $1x10^{-7}$ cm/sec) shall be removed to the location of the nearest passing test and replaced. It is noted that acceptable soil-bentonite backfill (i.e., which had a permeability less than $1x10^{-7}$ cm/sec) may need to be removed in order to remove the batch(es) of soil-bentonite backfill that had failed. All necessary repairs to the wall shall be made at no cost to the Government.

Should any or all of the excluded areas covered by Bid Option ***Items 0018AB, and 0019AB*** become available prior to the required cutoff wall installation physically reaching the excluded areas, the appropriate Bid Option Items will not be exercised, and the Contractor will be paid for completing those areas under Bid Item 0012.

If an on-site borrow area is used as a source of fill for any work platform construction, any obstructions that are encountered during excavation of the borrow pit shall be removed in accordance with SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL. No separate payment will be made for obstruction removal or for water treatment in an on-site borrow area. No separate payment will be made for work platform design, construction, grading, excavation, or fill that is necessary for the stability of the trench, or required as the result of constructing a work platform for the convenience to the contractor.

1.2.17.2 Unit of Measurement

The cutoff wall shall be measured for payment based upon the area in square feet along the face of the completed and satisfactory cutoff wall measured in a vertical plane through the centerline of the cutoff wall within the following boundaries:

The top of the cutoff wall payline. The top of the cutoff wall shall be defined for the purpose of measurement for payment as 1 foot below the level of the existing ground surface. Existing ground surface is defined as the ground surface prior to any grading activities and prior to the construction of any necessary work platform. Measurement will be based on the surveys required per SECTION 02260, Paragraph 3.5.1, Measurements and Surveys, taken by the Contractor prior to any grading activities and prior to the construction of any necessary work platform. No payment shall be made for cutoff wall located above this 1-foot depth even should the cutoff wall extend above this depth.

The bottom of the cutoff wall as measured by the Contractor and approved by the Contracting Officer. Measurement will be based on the surveys required per SECTION 02260, Paragraph 3.5.1, Measurements and Surveys.

Vertical lines at each corner of the approved full depths of the cutoff wall.

No measurement shall be made for cutoff wall located outside the boundaries defined above, shown on the Drawings, or for any runout sections (including corners and interruptions in the cutoff wall associated with the CSX railroad crossings ***~~and the decommissioning of the BP Amoco/ARCO oil recovery system~~***) that are not full depth. No measurement will be made for runout sections required at the locations described in Bid Options ***0018AB, and 0019AB.*** This pay item does not apply to the test section. Measurement shall be based on surveys and soundings taken by the Contractor as per the Implementation Plan defined in SECTION 02260 and approved by the Contracting Officer. The cutoff wall shall be measured by the applicable quantity and unit of measure shown on the base Bid Schedule.

The quantity in the base bid item does not include installing the cutoff wall at the locations described in Bid Options ***** ***~~0017AB,~~*** 0018AB, and 0019AB. Should any, or all of the excluded areas covered by Bid Option Items ***** ***~~0017AB,~~*** 0018AB, and 0019AB become available prior to the required cutoff wall construction physically reaching the excluded areas, the appropriate Bid Option Items will not be exercised, and the work performed in the excluded areas shall be measured under the provisions used for Bid Item ***0012***. Quantities added to Bid Item ***0012*** in this manner will not be considered under the VARIATIONS IN ESTIMATED QUANTITIES clause for Bid Item ***0012***.

Unit of measure: Square Feet (SF)

1.2.18 Drilling, Sampling, and Testing of Borings Prior to Production Cutoff Wall Installation (Bid Item 0014)

1.2.18.1 Payment

Payment for the drilling, sampling, and testing of borings shall be made at the contract unit price for each boring drilled. Such price will include costs associated with performing the borings, along the production cutoff wall alignment, and for sampling as defined in SECTION 02210 DRILLING, SAMPLING, AND TESTING OF BORINGS PRIOR TO PRODUCTION CUTOFF WALL INSTALLATION, including mobilization, preparation, setup, drilling, sampling,

backfilling the borehole, laboratory testing, and all other items incidental to the construction and completion of the required number of borings and obtaining the samples.

1.2.18.2 Unit of Measurement

No measurement will be made for borings that are abandoned because of obstructions. It is noted that previous borings and excavations at the site have encountered numerous buried obstructions as discussed in SECTION 02210 DRILLING, SAMPLING, AND TESTING OF BORINGS PRIOR TO PRODUCTION CUTOFF WALL INSTALLATION. The Contractor is responsible for advancing the boreholes through any such obstruction. If an obstruction is encountered, the Contractor can elect to offset a boring to avoid the obstruction; however, regardless of the number of attempts made to advance a boring, only those borings that are advanced to the required depth will be measured. No measurement will be made for supplemental borings required to replace borings from which satisfactory samples were not obtained because of mechanical failure of drilling and sampling equipment, negligence on the part of the Contractor, or other preventable cause for which the Contractor is responsible.

Unit of measure: Each (EA)

1.2.19 Security Surveillance Service (Bid item 0016)

1.2.19.1 Payment

Payment shall be made at the contract unit price for providing a security surveillance service to include non-work hours security personnel, a 4-wheel drive vehicle, mechanical and/or digital watchman’s clock(s) and watchman time recorders, and as described in SECTION 02821 SECURITY. Payment shall constitute full compensation for labor, materials, equipment, and incidentals necessary and required to perform and complete the work.

1.2.19.2 Unit of Measurement

Unit of measure: Months (MO)

*** 1.2.20 Aggregate Fill for Site Surface Depressions (Bid Item 0017)**

*** 1.2.20.1 Payment**

Payment at the contract unit price for delivery, placement, grading and compaction as defined in SECTION 02722 CRUSHED SLAG AGGREGATE FILL MATERIAL. Payment shall constitute full compensation for all plant, labor, materials, and incidentals necessary to perform and complete the work.

*** 1.2.20.2 Unit of Measurement**

Measurement will be based upon certified waybills (tonnage) and certified delivery tickets, as approved by the Contracting Officer.

Unit of measure: Tons (TON)

1.3 BID OPTION ITEMS

Prices for bid options shall be good for *** 625 *** calendar days after receipt of Notice to Proceed. The project duration shown in SECTION 00800 SPECIAL CONTRACT REQUIREMENTS, Paragraph 1.1, will not be affected by exercising the options. Any one or combination of bid items within the options may be exercised.

1.3.1 General

Three sections along the cutoff wall alignment may not be accessible to the contractor at the time the contractor is scheduled to either start and/or complete the obstruction investigation and inspection trench or cutoff wall. The locations are: 1) the CSX railroad easement on the east side of the property (approximately stations 43+00 to 45+00); 2) the CSX railroad easement on the west side of the property (approximately stations 76+00 to 89+00); and 3) the existing oil recovery system owned by BP Amoco/ARCO and located on the south side of the property (approximately stations 0+00 to 20+00). Refer to Drawing C-02 for the locations. The purpose of the Bid Options are to account for either on-site and/or off-site remobilization and demobilization, and for inefficiencies in stopping and re-starting to complete the obstruction investigation and inspection trench or cutoff wall, wherever continuous operation is not possible due to the lack of accessibility.

1.3.2 Railroad Relocation on East Side of Property, Obstruction Investigation and Inspection Trench (Bid Option Item ***0018AA***)

1.3.2.1 Payment

Payment at the contract unit price will be made for costs associated with installing the inspection trench within the CSX easement including on-site or off-site remobilizing and demobilizing, obstruction field verification, location and control surveys, excavating and backfilling the inspection trench, and mapping of all surface and subsurface obstructions in the cutoff wall alignment, including control and verification surveys required for pre- and post- cutoff wall installation and construction. Payment shall be made for all work as defined in SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL; SECTION 02260 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL; and SECTION 02115 UNDERGROUND STORAGE TANK REMOVAL. Payment shall constitute full compensation for all plant, labor, equipment, material, and any other incidentals necessary to complete the work required by this item regardless of the number of live/dead utilities, pipes, or extent of obstructions encountered. No separate payment shall be made for furnishing, placing, and removing any necessary shoring or bracing, dewatering the excavation, and associated incidentals.

Payment for the associated bid items that may be needed to support or complete the obstruction investigation and inspection trench (Bid Items 0003, 0004, 0006, 0008, and 0010AA through 0010AR) will be at the base bid unit price. If the easement is obtained prior to the obstruction investigation and inspection trench construction physically reaching this area, the base bid unit price for the obstruction investigation and inspection trench (Bid Item 0009) will apply.

1.3.2.2 Unit of Measurement

Measurement shall be made along the centerline of the proposed cutoff wall.

Unit of measure: Lineal Feet (LF)

1.3.3 Railroad Relocation on East Side of Property, Cutoff Wall Installation (Bid Option Item ***0018AB*)**

1.3.3.1 Payment

Payment shall be made at the contract unit price for on-site or off-site remobilizing and demobilizing and for installing the cutoff wall within the CSX easement including determination of the cutoff wall cross-section; determination of the slurry and backfill mixes; chemical compatibility testing; importing of any

necessary off-site borrow as a source of supplemental fines; construction and removal of work platforms; excavating soil by the slurry method of excavation for constructing the soil-bentonite slurry cutoff wall; cleaning the trench bottom; stockpiling of any excess excavated materials; mixing, blending, and placing the cutoff wall backfill; construction of the cutoff wall cap and all required testing. Refer to SECTION 02260 SOIL BENTONITE-SLURRY TRENCH CUTOFF WALL for more detail on the work required. Payment shall constitute full compensation for all plant, labor, equipment, material, and incidentals necessary to complete the work. Payment shall only be made for sections of the wall that are full depth. This work will require excavation of previously placed soil-bentonite backfill. No payment shall be made for excavating previously placed soil-bentonite backfill, nor shall any payment be made for runout sections that are not full depth.

Area(s) of the production walls that fail to meet the permeability requirement (i.e,. samples of the soil-bentonite backfill shall have a permeability of no more than $1x10^{-7}$ cm/sec) shall be removed to the location of the nearest passing test and replaced. It is noted that acceptable soil-bentonite backfill (i.e., which had a permeability less than $1x10^{-7}$ cm/sec) may need to be removed in order to remove the batch(es) of soil-bentonite backfill that had failed. All necessary repairs to the wall shall be made at no cost to the Government. No payment shall be made for excavating previously placed soil-bentonite backfill, nor shall any payment be made for runout sections that are not full depth.

Payment for the associated bid items that may be needed to support or complete the cutoff wall installation will be paid at the base bid unit price. If the easement is obtained prior to the cutoff wall installation physically reaching this area, the base bid unit price for the cutoff wall (Bid Item 0012) will be paid.

1.3.3.2 Unit of Measurement

Measurement shall be as described in the Measurement section for the base Bid Item 0012, Cutoff Wall Installation.

Unit of measure: Square Feet (SF)

1.3.4 Railroad Relocation on West Side of Property, Obstruction Investigation and Inspection Trench (Bid Option Item ***0019AA*)**

1.3.4.1 Payment

Payment at the contract unit price will be made for costs associated with installing the inspection trench within the CSX easement including on-site or off-site remobilizing and demobilizing, obstruction field verification, location and control surveys, excavating and backfilling the inspection trench, and mapping of all surface and subsurface obstructions in the cutoff wall alignment, including control and verification surveys required for pre- and post- cutoff wall installation and construction. Payment shall be made for all work as defined in SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL; SECTION 02260 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL; and SECTION 02115 UNDERGROUND STORAGE TANK REMOVAL. Payment shall constitute full compensation for all plant, labor, equipment, material, and any other incidentals necessary to complete the work required by this item regardless of the number of live/dead utilities, pipes, or extent of obstructions encountered. No separate payment shall be made for furnishing, placing, and removing any necessary shoring or bracing, dewatering the excavation, and associated incidentals.

Payment for the associated bid items that may be needed to support or complete the inspection trench (Bid Items 0003, 0004, 0006B, 0008, and 0010AA through 0010AR) will be at the base bid unit price. If the easement is obtained prior to the inspection trench construction physically reaching this area, the base bid unit price for the inspection trench (Bid Item 0009) will apply.

1.3.4.2 Unit of Measurement

Measurement shall be made along the centerline of the proposed cutoff wall.

Unit of measure: Lineal Feet (LF)

1.3.5 Railroad Relocation on West Side of Property, Cutoff Wall Installation (Bid Option Item ***0019AB***)

1.3.5.1 Payment

Payment shall be made at the contract unit price for on-site or off-site remobilizing and demobilizing and for installing the cutoff wall within the CSX easement including determination of the cutoff wall cross-section; determination of the slurry and backfill mixes; chemical compatibility testing; importing of any necessary off-site borrow as a source of supplemental fines;

construction and removal of work platforms; excavating soil by the slurry method of excavation for constructing the soil-bentonite slurry cutoff wall; cleaning the trench bottom; stockpiling of any excess excavated materials; mixing, blending, and placing the cutoff wall backfill; construction of the cutoff wall cap and all required testing. Refer to SECTION 02260 SOIL BENTONITE-SLURRY TRENCH CUTOFF WALL for more detail on the work required. Payment shall constitute full compensation for all plant, labor, equipment, material, and incidentals necessary to complete the work. Payment shall only be made for sections of the wall that are full depth. This work will require excavation of previously placed soil-bentonite backfill. No payment shall be made for excavating previously placed soil-bentonite backfill, nor shall any payment be made for runout sections that are not full depth.

Area(s) of the production walls that fail to meet the permeability requirement (i.e,. samples of the soil-bentonite backfill shall have a permeability of no more than $1x10^{-7}$ cm/sec) shall be removed to the location of the nearest passing test and replaced. It is noted that acceptable soil-bentonite backfill (i.e., which had a permeability less than $1x10^{-7}$ cm/sec) may need to be removed in order to remove the batch(es) of soil-bentonite backfill that had failed. All necessary repairs to the wall shall be made at no cost to the Government. No payment shall be made for excavating previously placed soil-bentonite backfill, nor shall any payment be made for runout sections that are not full depth.

Payment for the associated bid items that may be needed to support or complete the cutoff wall installation will be paid at the base bid unit price. If the easement is obtained prior to the cutoff wall installation physically reaching this area, the base bid unit price for the cutoff wall (Bid Item 0012) will be paid.

1.3.5.2 Unit of Measurement

Measurement shall be as described in the Measurement section for the base Bid Item 0012, Cutoff Wall Installation.

Unit of measure: Square Feet (SF)

~~**1.3.6 Existing BP Amoco/ARCO Oil Recovery System Area, Obstruction Investigation and Inspection Trench (Bid Option Item *0020AA*)**~~

~~1.3.6.1 Payment~~

~~Payment at the contract unit price will be made for costs associated with installing the inspection trench within the area of the BP Amoco/ARCO oil recovery system, including on-site or off-site remobilizing and demobilizing, obstruction field verification, location and control surveys, excavating and backfilling the inspection trench, and mapping of all surface and subsurface obstructions in the cutoff wall alignment including control and verification surveys required for pre- and post cutoff wall installation and construction. Payment shall be made for all work as defined in SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL; SECTION 02260 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL; and SECTION 02115 UNDERGROUND STORAGE TANK REMOVAL. Payment shall constitute full compensation for all plant, labor, equipment, material, and any other incidentals necessary to complete the work required by this item regardless of the number of live/dead utilities, pipes, or extent of obstructions encountered. No separate payment shall be made for furnishing, placing, and removing any necessary shoring or bracing, dewatering the excavation, and associated incidentals.~~

~~Payment for the associated bid items that may be needed to support or complete the inspection trench (Bid Items 0003, 0004, 0006, 0008, and 0010AA through 0010AR) will be at the base bid unit price. If the easement is obtained prior to the inspection trench construction physically reaching this area, the base bid unit price for the inspection trench (Bid Item 0009) will apply.~~

~~1.3.6.2 Unit of Measurement~~

~~Measurement shall be made along the centerline of the proposed cutoff wall.~~

~~Unit of measure: Lineal Feet (LF)~~

~~1.3.7 Existing BP Amoco/ARCO Oil Recovery System Area, Cutoff Wall Installation (Bid Option Item *0020AB*)~~

~~1.3.7.1 Payment~~

~~Payment shall be made at the contract unit price for on-site or off-site remobilizing and demobilizing and for installing the cutoff wall within the area of the BP Amoco/ARCO oil recovery system including determination of the cutoff wall cross-section; determination of the slurry and backfill mixes; chemical~~

~~compatibility testing; importing of any necessary off-site borrow as a source of supplemental fines; construction and removal of work platforms; excavating soil by the slurry method of excavation for constructing the soil-bentonite slurry cutoff wall; cleaning the trench bottom; stockpiling of any excess excavated materials; mixing, blending, and placing the cutoff wall backfill; construction of the cutoff wall cap and all required testing. Refer to SECTION 02260 SOIL BENTONITE-SLURRY TRENCH CUTOFF WALL for more detail on the work required. Payment shall constitute full compensation for all plant, labor, equipment, material, and incidentals necessary to complete the work. Payment shall only be made for sections of the wall that are full depth. This work will require excavation of previously placed soil-bentonite backfill. No payment shall be made for excavating previously placed soil-bentonite backfill, nor shall any payment be made for runout sections that are not full depth.~~

~~Area(s) of the production walls that fail to meet the permeability requirement (i.e,. samples of the soil-bentonite backfill shall have a permeability of no more than $1x10^{-7}$ cm/sec) shall be removed to the location of the nearest passing test and replaced. It is noted that acceptable soil-bentonite backfill (i.e., which had a permeability less than $1x10^{-7}$ cm/sec) may need to be removed in order to remove the batch(es) of soil-bentonite backfill that had failed. All necessary repairs to the wall shall be made at no cost to the Government. No payment shall be made for excavating previously placed soil-bentonite backfill, nor shall any payment be made for runout sections that are not full depth.~~

~~Payment for the associated bid items that may be needed to support or complete the cutoff wall installation will be paid at the base bid unit price. If the easement is obtained prior to the cutoff wall installation physically reaching this area, the base bid unit price for the cutoff wall (Bid Item 0011) will be paid.~~

~~1.3.7.2 Unit of Measurement~~

~~Measurement shall be as described in the Measurement section for the base Bid Item 0012, Cutoff Wall Installation.~~

~~Unit of measure: Square Feet (SF)~~

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SUBMITTAL REGISTER
(ER 415-1-10)

CONTRACT NO. DACW27-00-R-0030

TITLE AND LOCATION
INDIANA HARBOR AND CANAL CONFINED DISPOSAL FACILITY SUBSURFACE INVESTIGATION AND CUTOFF WALL, EAST CHICAGO, INDIANA

CONTRACTOR

SPECIFICATION SECTION 1330

TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL									CLASSI-FICATION		GOVT REVIEWER	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
				DATA	DRAWINGS	OTHER AS NOTED	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	INFORMATION ONLY	GOVERNMENT APPROVED		SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.
		00700	Accident Prevention Plan					X						X	SO									
		01110 1.2	Project Construction Management and Operation Plan	X		X								X	CO ED									
		01110 1.2	Project Schedule			X	X							X	CO ED									
		01330	Submittal Register			X								X	CO									
		01351 1.3	Site Safety and Health Plan (SSHP)	X	X	X	X							X	CO SO ED									
		01356 1.3	Erosion control plan			X			X					X	CO ED									
		01356 1.3	Site Construction Plan			X	X		X					X	CO ED									
		01356 1.3	Mill Certificate or Affidavit							X			X		CO ED									
		01410 1.3	Environmental Protection Plan		X	X	X		X					X	CO ED									
		01451 1.2	Contractor Quality Control Plan (CQC)	X		X								X	CO ED									
		01451 3.5	Preparatory Phase Checklist			X							X		CO									
		01451 3.5	Initial Inspection Checklist			X							X		CO									
		01451	CQC Reports			X							X		CO									
		01580 1.3	Temporary Field Office Location, Staging, and Access Plan		X	X	X							X	CO									
		01780 1.1	As-Built Drawings		X							X		X	CO ED									
		01780 1.1	As-Built Record of Materials			X						X		X	CO ED									
		01780 1.1	Final Clean-Up			X						X		X	CO									
		02101 1.3	Pre-construction Well Closure Plan	X		X								X	CO ED									
		02101 1.3	Post-construction Well Closure Report			X			X				X		CO ED									
		02115 1.2	Work Plan	X		X								X	ED SO CO									

SUBMITTAL REGISTER (ER 415-1-10)																							CONTRACT NO. DACW27-00-R-0030
TITLE AND LOCATION INDIANA HARBOR AND CANAL CONFINED DISPOSAL FACILITY SUBSURFACE INVESTIGATION AND CUTOFF WALL, EAST CHICAGO, INDIANA													CONTRACTOR										SPECIFICATION SECTION 1330
				TYPE OF SUBMITTAL									CLASSI-FICATION			CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		
TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	OTHER AS NOTED	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	INFORMATION ONLY	GOVERNMENT APPROVED	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	REMARKS
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.
		02115 1.2	Qualifications					X						X	ED									
		02120 1.4	On-Site Hazardous Waste and Free Product Waste Management	X		X								X	CO ED									
		02120 1.4	Off-site Waste Management and Disposal Plan	X		X								X	CO ED									
		02120 1.4	Spill Prevention, Containment and Countermeasure Plan	X		X								X	CO ED									
		02120 1.4	Statement of Qualifications for Storage, Transportation and					X						X	CO									
		02120 1.4	Statement of Qualifications for Environmental Sample					X						X	CO									
		02120 1.4	Chemistry Data Package	X					X				X		ED									
		02120 1.4	Recordkeeping						X			X		X	ED									
		02120 1.4	Spill Response						X				X		CO ED									
		02120 1.4	Exception Reports						X					X	ED									
		02120 1.4	Final Disposal Report			X			X					X	CO ED									
		02120 1.4	Certificates of Registration							X			X		ED									
		02120 1.4	Off-Site Policy Compliance Certification							X			X		ED									
		02120 1.4	Certificates of Disposal							X			X		ED									
		02120 1.4	Notices of Non-Compliance and Notices of Violation									X	X		ED									
		2150 1.4	Oil Boom Installation, Operation and Maintenance Plan		X	X	X							X	CO ED									
		2150 1.4	Preliminary Design of Dewatering Process System		X	X								X	CO ED									
		2150 1.4	Infiltration Gallery		X	X								X	CO ED									
		02150 1.4	Materials and Equipment	X		X								X	CO ED									
		02150 1.4	Material Safety Data Sheet	X		X							X		SO									
		02150 1.4	Piping System		X									X	CO ED									

SUBMITTAL REGISTER
(ER 415-1-10)

CONTRACT NO. DACW27-00-R-0030

TITLE AND LOCATION
INDIANA HARBOR AND CANAL CONFINED DISPOSAL FACILITY SUBSURFACE INVESTIGATION AND CUTOFF WALL, EAST CHICAGO, INDIANA

CONTRACTOR

SPECIFICATION SECTION 1330

TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	TYPE OF SUBMITTAL									CLASSI-FICATION			CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		REMARKS
				DATA	DRAWINGS	OTHER AS NOTED	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	INFORMATION ONLY	APPROVED GOVERNMENT	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.
		2150 1.4	Materials and Equipment Instructions			X							X		CO ED									
		02150 1.4	Manufacturer's Representative			X		X						X	ED									
		02150 1.4	Dewatering System Operation Manual (including oil/water			X			X					X	CO ED									
		02210 1.4	Permits, Certifications, and Licenses	X		X				X			X		CO									
		02210 1.4	Plan and Profile		X	X							X		CO ED									
		02210 1.4	Drilling Logs & Lab Data	X		X						X		X	CO ED									
		02215 1.4	Excavation, Handling, and Obstruction Removal Work Plan	X		X	X							X	CO ED									
		02215 1.4	Site Survey and Plan	X		X	X							X	CO ED									
		02215 1.4	Shoring, Sheeting, Bracing, Sloping, and/or Trench Boxes		X	X							X		CO ED									
		02215 1.4	Obstruction Conditions and Closure Details		X	X			X					X	CO ED									
		02260 1.5	Preconstruction Chemical Compatibility Testing Plan	X		X								X	CO ED									
		02260 1.5	Soil-bentonite Slurry Trench Cutoff Wall Implementation Plan	X		X	X							X	CO ED									
		02260 1.5	As-Built Profile and Drawing	X	X	X							X		CO ED									
		02260 1.5	Preconstruction Chemical Compatibility Test Results Report	X		X			X					X	CO ED									
		02260 1.5	Test Section Compliance Report	X	X	X			X					X	CO ED									
		02260 1.5	Bentonite Certificate							X			X		CO ED									

SUBMITTAL REGISTER (ER 415-1-10)																							CONTRACT NO. DACW27-00-R-0030
TITLE AND LOCATION INDIANA HARBOR AND CANAL CONFINED DISPOSAL FACILITY SUBSURFACE INVESTIGATION AND CUTOFF WALL, EAST CHICAGO, INDIANA													CONTRACTOR										SPECIFICATION SECTION 1330
				TYPE OF SUBMITTAL									CLASSI-FICATION			CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		
TRANS-MITTAL NO.	ITEM NO.	SPECIFICATION PARAGRAPH NUMBER	DESCRIPTION OF ITEM SUBMITTED	DATA	DRAWINGS	OTHER AS NOTED	SCHEDULES	STATEMENTS	REPORTS	CERTIFICATES	SAMPLES	RECORDS	INFORMATION ONLY	APPROVED GOVERNMENT	REVIEWER	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	CODE	DATE	SUBMIT TO GOVERN-MENT	CODE	DATE	REMARKS
a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.	t.	u.	v.	w.	x.	y.
		02260 1.5	Observation Well Levels									X	X		CO ED									
		02260 1.5	Soundings, Measurements, and Surveys						X			X	X		CO ED									
		02260 1.5	Bentonite Slurry Mix			X						X	X		CO ED									
		02260 1.5	Soil-Bentonite Backfill Material Mix									X	X		CO ED									
		02260 1.5	Quality Control Data			X			X			X	X		CO ED									
		02722 1.4	Waybills and Delivery Data	X										X	CO									**per Amendment #2**
		02722 1.4	Test Reports						X					X	ED									**per Amendment #2**
		02821 1.4	Security Chain Link/Barbed Fence							X			X		CO									
		02821 1.4	Licensed Surveillance Agency			X							X		CO									
		02821 1.4	Mechanical Locks			X							X		CO									
		02821 1.5	Site Security Plan			X								X	CO SO									
		11500 1.3	Materials and Equipment	X		X								X	ED									
		11500 1.3	Instrumentation and Control System	X	X	X								X	ED									
		11500 1.3	Data Collection Weekly Report			X			X				X		CO ED									
		11500 1.3	Performance Verification Test			X		X						X	CO ED									
		11500 1.3	Installation			X							X		CO ED									
		11500 1.3	Instruction Manual			X							X		CO ED									
		11500 1.3	Oil/Water Separator O & M Manual			X								X	CO ED									

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE	TRANSMITTAL NO.

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: ☐ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SEC. NO. *(Cover only one section with each transmittal)*	PROJECT TITLE AND LOCATION		CHECK ONE: THIS TRANSMITTAL IS FOR FIO ☐ GOV'T ☐ APPROVAL

ITEM NO. a.	DESCRIPTION OF ITEM SUBMITTED *(Type size, model number/etc.)* b.	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. (See Instruction no. 8) c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE g.	VARIATION (See instruction no. 6) h.	FOR CE USE CODE i.
				SPEC. PARA. NO. e.	DRAWING SHEET NO. f.			

REMARKS	I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated _____ NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED *(List by Item No.)*	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

Instructions

1. Section I will be initiated by the contractor in the required number of copies.

2. Each transmittal shall be numbered consecutively in the space provided for “Transmittal No.”. This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; in resubmittals, insert transmittal number of last submission as well as the new submittal number.

3. The “Item No.” will be the same “Item No.” as indicated on ENG FORM 4288-R for each entry on this form.

5. Separate transmittal form will be used for submittals under separate section of the specifications.

6. a check shall be placed in the “Variation” column when a submittal is not in accordance with the plans and specifications—also, a written statement to that effect shall be included in the space provided for “Remarks.

7. Form is self-transmittal, letter of transmittal is not required.

8. When a sample of material or Manufacturer’s Certificate of Compliance is transmitted, indicate “Sample” or “Certificate” in column c, Section I.

9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g. to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A – Approved as submitted.

B – Approved, except as noted on drawings.

C – Approved, except as noted on drawings. Refer to attached sheet resubmission required.

D – Will be returned by separate correspondence.

E – Disapproved (See attached).

F – Receipt acknowledged.

FX – Receipt acknowledged, does not comply as noted with contract requirements.

G – Other *(Specify)*

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG form 4025-R)

SECTION 01410

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 SCOPE

This section covers the requirements for environmental protection during construction activities. The Contractor shall perform the work in a manner minimizing environmental pollution and damage as the result of construction operations. Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of land, water, and air, and includes management of visual aesthetics, noise, solid waste, as well as other pollutants.

1.2 REFERENCES

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 1501 (1994) Hydrocarbons, Aromatics

NIOSH 5503 (1994) Polychlorobiphenyls

1.3 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.4 SUBMITTALS

The Contractor shall submit an environmental protection plan in accordance with provisions herein specified and in accordance with SECTION 01330 SUBMITTAL PROCEDURES.

SD-04 Data

Air Monitoring Data Reports; FIO

The Contractor shall provide a weekly report that summarizes the results of the Contractor air monitoring activities in accordance with the Air Quality Monitoring Plan.

SD-09 Reports

Environmental Protection Plan; GA

The Contractor shall submit an Environmental Protection Plan. The Contractor may not begin field work until the Environmental Protection Plan is approved. Approval of the Contractor's plan will not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures. The environmental protection plan shall include, but shall not be limited to, the following:

a. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.

b. As a part of the Environmental Protection Plan, the contractor shall prepare a contaminant prevention statement identifying potentially hazardous substances to be used on the job site and intended actions to prevent accidental or intentional introduction of such materials into the air, water, or ground. The Contractor shall detail provisions to be taken to meet Federal, State, and local laws and regulations regarding the storage and handling of the materials. As appropriate, the Contractor may reference the Spill Prevention, Containment and Countermeasure Plan and the Off-Site Waste Management and Disposal Plan, described in SECTION 02120 STORAGE, TRANSPORTATION, AND DISPOSAL OF HAZARDOUS MATERIAL AND FREE PRODUCT WASTE.

c. Procedures to be implemented to provide the required environmental protection, to comply with the applicable laws and regulations, and to correct pollution due to accident, natural causes, or failure to follow the procedures of the Environmental Protection Plan.

d. Contractor generated waste materials, including used personal protective equipment, garbage, and recovered liquid petroleum from the site may not be left on the ECI property. The contractor will provide a schedule for the periodic disposal of solid and hazardous material from the site.

e. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, material storage areas, and work platforms (including temporary oil storage areas), structures, sanitary facilities, and stockpiles of excess or spoil materials (including debris such as petroleum piping or concrete rubble).

f. Environmental monitoring plans for the job site, including land, water, and noise monitoring. Environmental monitoring for this contract also includes the monitoring and maintenance of an oil boom located in the Lake George Branch of the Indiana Harbor Canal, along the property edge.

g. Traffic control plan, including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather, measures to control dust and prevent the movement of fugitive dust off site, and vehicle control and decontamination requirements to prevent the spread of pollution off the site.

h. Erosion control and run-off control plans, including water and wind erosion of uncovered soils, stockpiles, and material piles. This information shall also be part of the Erosion Control Plan, as described in SECTION 01356 STORM WATER POLLUTION PREVENTION MEASURES, and as required for a National Pollutant Discharge Elimination System under the State of Indiana general permit rules.

i. As part of the Environmental Protection Plan, the Contractor shall prepare an air monitoring plan. The requirements for air monitoring are described in Paragraphs 3.1.8.1 through 3.1.8.11.

1.5 PERMITS

The Contractor shall obtain all needed permits or licenses. The Government will not obtain any permits for this project; see Contract Clause PERMITS AND RESPONSIBILITIES. The Contractor shall be responsible for implementing the terms and requirements of the appropriate permits as needed and for payment of all fees.

1.6 NOTIFICATION

The Contractor is responsible for notifying the Contracting Officer of any noncompliance and proposed corrective actions.

In the event that the Contracting Officer notifies the Contractor in writing of any observed noncompliance with the previously mentioned Federal, State or local laws or regulations, permits, and other elements of the Contractor's Environmental Protection Plan, then the Contractor shall, after receipt of such notice, inform the Contracting Officer of proposed corrective action and take such action when approved. If the Contractor fails to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or costs or damages allowed to the Contractor for any such suspensions.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PROTECTION OF ENVIRONMENTAL RESOURCES

The environmental resources within the project boundaries and those affected outside the limits of the permanent work under this contract shall be protected for the entire period of this contract. The Contractor shall confine all activities to areas defined by the drawings and specifications.

3.1.1 Protection of Land Resources

Prior to the beginning of any construction, the Contractor shall identify the land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without permission. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

3.1.2 Work Area Limits

Prior to any construction, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area that are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the

markers shall be visible. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.1.3 Unprotected Erodible Soils

Earthwork brought to final grade shall be finished in a manner consistent with the erosion control plan, as described in SECTION 01356 STORMWATER POLLUTION PREVENTION MEASURES. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in cases where the constructed feature obscures borrow areas and waste material areas, these areas shall not initially be totally cleared. Clearing of such areas shall progress in reasonably sized increments as needed to use the developed areas as approved by the Contracting Officer.

3.1.4 Disturbed Areas

The Contractor shall effectively prevent erosion and control sedimentation and runoff throughout the entire life of the contract, as described in SECTION 01356 STORM WATER POLLUTION PREVENTION MEASURES.

3.1.5 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Borrow areas and spoil areas shall be managed to minimize erosion and to prevent sediment from entering nearby waters or leaving the site as runoff. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas from despoilment.

3.1.6 Protection of Water Resources

a. The Contractor shall keep construction activities under surveillance, management, and control to prevent pollution of surface water. The control of pollutants in the adjacent canal shall include the installation and maintenance of an oil boom in the Lake George Branch of the Indiana Harbor Canal, along the portion of the ECI property being used in this project. The Contractor shall maintain the boom throughout the life of the contract, and shall remove free

product that accumulates behind the boom. Refer to SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS for design, operation, and maintenance of boom.

b. Toxic or hazardous chemicals shall not be applied to soil or vegetation when such application may cause groundwater or surface water contamination. Water removed during dewatering of trenches may be infiltrated into the ground on site, after the water has been passed through a dewatering process system containing an oil/water separator. Free product collected in the separator will be disposed of according to legal requirements. More information on the requirements for the dewatering process system is given in SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS and SECTION 11500 OIL/WATER SEPARATOR PROCESS EQUIPMENT.

c. Monitoring of water areas affected by construction shall be the Contractor's responsibility. The Contractor shall monitor all water areas affected by construction activities.

3.1.7 Fish and Wildlife

The Contractor shall minimize interference with, disturbance to, and damage of fish and wildlife. Species that require specific attention along with measures for their protection shall be listed by the Contractor prior to beginning of construction operations.

3.1.8 Protection of Air Resources

Equipment operation and activities or processes performed by the Contractor in accomplishing the specified construction shall comply with all applicable Federal, State, and local air quality laws and regulations. To control off-site air quality impacts during on-site construction activities, the Contractor shall conduct construction emissions air monitoring, as described in the following paragraphs.

3.1.8.1 Construction Emissions Air Monitoring Requirements

The Contractor will conduct air monitoring for the purpose of work control so as to ensure that the release of airborne contaminants is minimized and that air emissions due to construction activities do not adversely impact air quality in the surrounding community. The requirements for this monitoring, hereinafter referred to as “construction emissions air monitoring”, are distinct from the personal exposure

monitoring required by OSHA for the purpose of ensuring site worker health and safety. The construction emissions air monitoring shall include real-time air monitoring using field instruments designed to measure airborne emissions, as well as National Institute for Occupational Safety and Health (NIOSH) air sampling methods for laboratory analysis.

The Contractor must submit for Government approval an Air Quality Monitoring Plan as part of the Environmental Protection Plan. The plan shall include anticipated emission control measures for volatile and particulate emissions, and provide details of a corrective action plan to control releases. The Contractor shall refer to SECTION 0200 INFORMATION AVAILABLE TO BIDDERS for a summary of analytical results from previous site investigations and conditions. The Air Quality Monitoring Plan must be approved by the Contracting Officer before work can begin on site. The Contracting Officer, at any time during the course of the contract, retains the right to require the Contractor to perform control measures and implement corrective action to reduce air emissions.

3.1.8.2 Construction Emissions Air Monitoring

The primary goal of the Contractor’s construction emissions air monitoring is to demonstrate that air emissions resulting from construction or other contract work activities do not impact the surrounding community. To achieve this goal, the Contractor shall follow the action level guidelines outlined in Table 1.

Table 1: Summary of Construction Emissions Air Monitoring

	Turnaround time	Sampling / Analytical Method(s)	Action Level	Basis for Corrective Action
Low-Volume Benzene Monitoring	48 hours	NIOSH Method 1501	0.5 ppm Above Background	Action level exceedence for five consecutive days, or twice weekly
Low-Volume PCB Monitoring	48 hours	NIOSH Method 5503	0.1 mg/m^3 Above Background	Action level exceedence for five consecutive days, or twice weekly
Real-Time Volatile Monitoring	Immediate	PID,FID,OVA or other approved field unit	5 ppm total VOCs	Sustained reading for 15 minutes
Real-Time Particulate Monitoring	Immediate	Field particulate monitoring unit	State of Indiana air regulations or visible dust plume	If regulatory action levels are exceeded or if visible dust plume moving from work areas

It should be noted that the action levels specified in Table 1, are requirements for the protection of the surrounding community. These action levels are not intended to replace, but rather to supplement, other Contractor air monitoring requirements, including those for protection of site worker health and safety, and compliance with Federal, State, and local regulatory requirements. The construction emissions action levels for each monitoring protocol are detailed here.

- NIOSH Method 1501: The on-site chronic action level for Benzene is 0.5 parts per million (ppm). If samples are being collected daily, the Contractor's air monitoring system must demonstrate that Benzene levels in the immediate work area do not exceed 0.5 ppm above background levels (as described per Paragraph 3.1.8.3, Background Monitoring) for five consecutive days. If samples are being collected twice weekly, then the Contractor's monitoring must demonstrate that Benzene levels do not exceed 0.5 ppm above background for both samples. At the beginning of each work week, the Contractor shall evaluate the monitoring data from the previous week. If the data indicates that action levels for Benzene were consistently exceeded during the previous work week (i.e., for all sampling events during that week), the Contractor shall take appropriate corrective action to control volatile emissions, as per Paragraph 3.1.8.8, Control Measures for Air Emissions.

- NIOSH Method 5503: The on-site chronic action level for total PCBs is 0.1 mg/m^3. The Contractor's air monitoring system must demonstrate that total PCB levels in the immediate work area do not exceed 0.1 mg/m^3 above background levels (as described per Paragraph 3.1.8.3, Background Monitoring) averaged over a one-week construction period. If samples are being collected twice weekly, then the Contractor's monitoring must demonstrate that total PCB levels do not exceed 0.1 mg/m^3 above background for both samples. At the beginning of each work week, the Contractor shall evaluate the monitoring data from the previous week. If the data indicates that action levels for PCBs were consistently exceeded during the previous work week (i.e., for all sampling events during that week), the Contractor shall take appropriate corrective action to control particulate emissions, as per Paragraph 3.1.8.8, Control Measures for Air Emissions.

- Real-time Volatile Emissions Monitoring: The on-site action level for real-time volatile emissions monitoring data is 5 ppm for total Volatile Organic Compounds (based on PID,FID, or OVA meters calibrated to Benzene). If the meter reading

exceeds 5 ppm, sustained for a period of 15 minutes, then the Contractor shall take appropriate corrective action to control volatile emissions, as per Paragraph 3.1.8.8, Control Measures for Air Emissions.

- Real-time Particulate Emissions Monitoring: The Contractor shall adhere to any applicable Federal, State, or local regulations with respect to fugitive dust and particulate emissions (including, but not restricted to, Title 326 of Indiana Administrative Code - Air Pollution Control Board). If any regulatory action levels for particulates are exceeded, or if a visible dust plume is detected moving away from the construction areas, the Contractor shall take appropriate corrective action to control particulate emissions, as per Paragraph 3.1.8.8, Control Measures for Air Emissions.

3.1.8.3 Background Monitoring

a. Before Construction. Background monitoring shall be conducted daily for at least ***fourteen (14)*** days prior to the start of any earth moving, groundbreaking, or other construction activities. During this time, ***one (1)*** analytical sample for Benzene analysis and ***one (1)*** analytical sample for PCB analysis shall be collected daily from a representative location of the ECI site. These samples will be collected and analyzed in accordance with NIOSH method 1501 and NIOSH method 5503, respectively, as discussed in Paragraph 3.1.8.4, NIOSH Sampling and Analysis for Benzene and PCBs. This data will be recorded for the purpose of documenting background levels for Benzene and PCBs. In addition, real-time measurements for volatile and particulate emissions shall be collected at the same location as the low-volume samples.

b. During Construction. Once construction activities have begun, background levels for Benzene and PCBs shall be measured on a daily basis during the initial evaluation phase and twice weekly during the verification phase, by the appropriate NIOSH methods and real-time monitoring equipment. Upon review of initial evaluation data, sample frequency during the verification phase may be increased by the Contracting Officer. Background levels shall be obtained at an adjacent upwind location on the site representative of the air quality entering the work zones and at a distance unaffected by construction emissions.

3.1.8.4 NIOSH Sampling and Analysis for Benzene and PCBs

To comply with the action levels described above in Paragraph 3.1.8.2, Construction Emissions Air Monitoring Action Levels, the Contractor shall collect during construction activities a minimum of: 1) four low-volume air samples for Benzene analysis using National Institute for Occupational Safety and Health (NIOSH) Method 1501; and 2) four low-volume samples for PCB analysis using NIOSH Method 5503. Sample collection frequency will vary with the phase of construction, as described in Paragraph 3.1.8.7, Monitoring Frequency and Locations During Construction. The Contractor shall be prepared to use higher flow trains, larger sampling media apparatus, and larger pumps for more efficient capture capability, if necessary.

Sample analysis shall be performed with a maximum 48-hour turnaround time from the time of sample collection. Air samples shall be analyzed by a laboratory(ies) that is participating in the American Industrial Hygiene Association's (AIHA) Industrial Laboratory Accreditation Program and is successfully participating in the Proficiency Analytical Testing (PAT) program for Benzene and PCBs. An on-site laboratory is acceptable as long as these accreditation requirements are met.

3.1.8.5 Real-Time Monitoring for Volatile Emissions

Real-time monitoring for emissions of Volatile Organic Compounds (VOCs) shall be conducted using portable photo-ionization detectors (PID), flame-ionization detectors (FID), or other organic vapor analyzer (OVA) meters, as approved by the Corps of Engineers. These meters shall be calibrated to Benzene in accordance with manufacturers' specifications, and shall be capable of measuring total VOCs (as Benzene) to at least 1 ppm or lower. Meter readings shall be taken at multiple locations in areas immediately adjacent to the work zone(s), as described in Paragraph 3.1.8.7, Monitoring Frequency and Locations During Construction. If monitoring indicates that air emissions exceed the prescribed action levels, the Contractor shall take steps to control volatile emissions in the work area, as described per Paragraph 3.1.8.8, Control Measures for Air Emissions.

3.1.8.6 Real-Time Monitoring for Particulate Emissions

Real-time monitoring for particulate emissions shall be conducted using field instruments capable of measuring fugitive dust/particulate levels. Particulate measurements shall be taken at multiple locations immediately adjacent to the work zone(s),

as outlined in Paragraph 3.1.8.7, Monitoring Frequency and Locations During Construction. If State of Indiana standards for particulate emissions are exceeded, or if there is a visible dust plume migrating away from the work zone(s), the Contractor shall take steps to control the dust level in the work area, as per Paragraph 3.1.8.8, Control Measures for Air Emissions.
3.1.8.7 Monitoring Frequency and Locations During Construction

During construction activities, NIOSH analytical samples for Benzene and PCBs shall be collected from a minimum of four locations, including one location representative of the area upwind of the work areas, and three downwind locations, as described in Paragraph 3.1.8.3b. The sampling frequency for the Benzene and PCB analyses is indicated in Table 2. NIOSH samples shall be collected daily during a twenty-eight (28) day pre-construction monitoring period and during a 14 day initial evaluation phase for each construction activity (i.e., the first fourteen days of each activity). After the each initial evaluation phase, a verification phase shall begin, at which time NIOSH samples shall be collected, at a minimum, twice weekly. However, sample frequency may be increased if necessary, upon review of initial evaluation data or other relevant information, as directed by the Contracting Officer.

During construction, real-time measurements shall also be taken at least once every two hours, as well as once at the beginning of each work shift and once at the end of each work shift. Real-time measurements shall be taken from multiple locations, including at least the four NIOSH sample locations. Real-time measurements shall also be taken from additional locations as needed to ensure that the air emissions at the work site do not impact the surrounding community.

All construction emissions monitoring, including the NIOSH and real-time methods, shall be located in areas immediately adjacent to the construction activities and, with the exception of upwind samples, shall be located in areas most likely to be impacted by air emissions due to construction, soil stockpiling, groundwater treatment or discharge activities, or any land-disturbing activity where soil or groundwater is disturbed or transported. Samples shall be located such that engine exhaust from construction equipment does not impact the air samples collected. The Contractor shall use the on-site meteorological data measurements, described in Paragraph 3.1.8.10, Meteorological Equipment and Data, to select appropriate upwind and downwind air monitoring locations.

* Table 2: Air Monitoring Frequency and Data Reporting for NIOSH Sampling and Analysis for Benzene and PCBs.

Monitoring Phase	Activity Period	Sampling Frequency	Number of Locations[1]	Number of analyses
Pre-Construction Phase	Immediately prior to start of construction.	14 consecutive days before start of construction	1	14 Benzene 14 PCB
Initial Evaluation Phase	Beginning of earthwork (clearing & grubbing)	14 consecutive days	4	56 Benzene 56 PCB
	Beginning of inspection trench construction	14 consecutive days	4	56 Benzene 56 PCB
	Cut-off wall test section	14 consecutive days	4	56 Benzene 56 PCB
	Beginning of cut-off wall construction	14 consecutive days	4	56 Benzene 56 PCB
Verification Phase	During earthwork (clearing & grubbing)	Twice Weekly[2]	4	16 Benzene 16 PCB
	During inspection trench construction	Twice Weekly[2]	4	258 Benzene 258 PCB
	During cut-off wall construction	Twice Weekly[2]	4	258 Benzene 258 PCB
			Subtotal:	770 Benzene 770 PCB
			QA/QC SAMPLES[3]:	77 Benzene 77 PCB
			TOTAL NUMBER OF ANALYSES	**847 Benzene 847 PCB**

(1) There is one sample location during pre-construction phase, and four sample locations during all phases of construction, which include one upwind sample and three downwind samples.

(2) Minimum sampling frequency during verification phase is twice Weekly. However, sample frequency may be increased if necessary, upon review of initial evaluation data or other relevant information, as directed by the Contracting Officer.

(3) QA/QC samples are assumed to be collected at a frequency of 10% of the total number of samples, including one duplicate sample for every twenty samples, and one field blank for every twenty samples.

3.1.8.8 Control Measures for Air Emissions

a. Control of Volatile Emissions. The Contractor shall specify measures that will be implemented to control emissions of volatile compounds. These measures shall include, but are not limited to, the following measures: covering of stockpiles; spray foam application; reducing excavation rate; and increasing groundwater pumping rate.

b. Control of Particulate Emissions. The Contractor shall specify measures that will be implemented to control fugitive emissions of particulates. Particulate emissions include dust particles, and aerosols and gaseous by-products from construction activities. The Contractor shall be responsible for controlling particulate emissions at all times, including weekends, holidays, and hours when work is not in progress. The Contractor shall implement control measures at excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas to prevent: 1) airborne particulate matter in excess of the air pollution standards; 2) visible dust from leaving the site; and 3) dust that is or could cause a hazard or a nuisance. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs, or as indicated by real-time particulate air monitoring.

3.1.8.9 Monitoring Equipment

The Contractor is responsible for supplying all monitoring equipment, materials, and labor for air monitoring activities, including samplers, sampling media, and power supplies. Whenever possible, real-time monitoring equipment shall be equipped with a data-logger or other equivalent data recording system capable of continuous data recording. The coordinates of all air monitoring locations, both real-time and low-volume, shall be recorded using a Global Positioning System (GPS) device.

Diesel generators shall not be used for powering monitoring equipment if the emissions could contaminate air samples or other air sampling that may be occurring by other contractors. The Contractor is responsible for insuring that diesel generators and equipment do not interfere with air monitoring.

The Contractor is responsible for supplying power for air monitoring and for the meteorological equipment.

3.1.8.10 Meteorological Equipment and Data

The Contractor shall provide and maintain meteorological equipment within the work area to monitor weather conditions. Using appropriate meteorological data recording equipment, the Contractor shall record information on wind speed, wind direction, ambient temperature, and solar radiation, as per Table 3.

The equipment shall be equipped for continuous data recording, and shall be capable of being moved from one on-site location to another, if deemed necessary by the Corps of Engineers. The location for installing the meteorological equipment shall be selected in the field under the direction of the Contracting Officer.

Meteorological data shall be reported with the same frequency as analytical results. Data on wind speed and wind direction shall be used to guide the Contractor in determining the general direction of air flow and contaminant flow at the project site and identifying appropriate air monitoring locations.

Table 3: Meteorological Data Measurement Requirements

Data Type	Accuracy	Measurement Resolution
Wind speed	+/- 0.5 m/s	0.1 m/s
Wind direction	+/- 5^{o}	1^{o}
Ambient temperature	+/- 0.5^{o}C	0.1^{o}C
Solar radiation	50 W/m^2	50 W/m^2
Time	+/- 5 minutes	1 minute

3.1.8.11 Data Management

The Contractor shall record, and make available for inspection by the Contracting Officer, data to include:

a. Date, time, GPS location, and weather conditions at the time for all upwind and downwind real-time emission monitoring events.

b. Meter reading for each real-time emissions monitoring event.

c. Name of monitoring equipment operator for each monitoring event to include the collection of meteorological data.

d. Documentation of any exceedances of action levels and associated corrective actions.

e. Records related to the calibration and maintenance of all monitoring equipment.

The Contract shall submit all data to the Contracting Officer daily. In addition, the Contractor shall submit a weekly air monitoring summary, along with analytical results, in an electronic format.

3.1.8.12 Hydrocarbons and Carbon Monoxide

Hydrocarbon and carbon monoxide emissions from equipment shall be controlled to Federal and State allowable limits at all times.

3.1.8.13 Odors

Odors shall be controlled at all times for all construction activities, processing, and preparation of materials.

3.1.9 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The contractor shall use methods and devices to control noise emitted by equipment. Noise levels shall in all cases be in compliance with applicable local codes and regulations.

3.2 WASTE DISPOSAL

Disposal of wastes shall be as specified in SECTION 02120 STORAGE, TRANSPORTATION, AND DISPOSAL OF HAZARDOUS MATERIALS AND FREE PRODUCT WASTES and as specified below.

3.2.1 Solid Wastes

Solid wastes generated by the Contractor shall be placed in containers that are emptied on a regular schedule. Handling and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste, including used personal protection equipment, will become co-mingled with solid waste. The Contractor shall

transport and dispose of solid waste in compliance with Federal, State, and local requirements for solid waste disposal. The Contractor is responsible for determining the appropriate disposal method for used PPE, and for documenting correct off-site disposal.

3.2.2 Liquid Wastes

3.2.2.1 Waste Oil

Waste oil and liquid phase hydrocarbons collected during groundwater pumping or trench dewatering activities shall be separated from the water in an oil/water separator. The waste oils shall be stored in corrosion-resistant, compatible containers and ensuring no spillage to ground or water. The oil must be handled and stored in a manner consistent with all Federal, State, and local requirements for petroleum storage. Inspections of storage areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government, and will be included as part of data management for the site. Waste oil shall be disposed of in a manner to prevent spills and in accordance with SECTION 02120 STORAGE, TRANSPORTATION, AND DISPOSAL OF HAZARDOUS MATERIALS AND FREE PRODUCT WASTES.

3.2.2.2 Hazardous Wastes

The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing and storage, and shall collect waste in suitable containers observing compatibility. The Contractor shall transport and dispose of hazardous waste in compliance with Federal and local laws and regulations. Hazardous or toxic materials shall be disposed of in a manner to prevent spills and in accordance with SECTION 02120 STORAGE, TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS AND FREE PRODUCT WASTES. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility.

3.3 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area will be so designated by the Contracting Officer if any have been identified. The Contractor shall take precautions to preserve all such resources as they existed at the time they were first pointed out. The Contractor

shall provide and install protection for these resources and be responsible for their preservation during the life of the contract. If during excavation or other construction activities any previously unidentified or unanticipated resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rocks or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer.

3.4 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction. This shall involve the removal of all temporary facilities such as, but not limited to, haul roads, work areas, structures, decontamination facilities, or other vestiges of construction within the work, access, or storage areas. Excess soil and excavated debris will be stockpiled and left on site, as directed by the Contracting Officer.

3.5 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.6 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental pollution control. Additional training requirements for this hazardous waste site project are referenced in SECTION 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTW/UST).

3.7 QUALITY CONTROL

The Contractor shall establish and maintain quality control for environmental protection of all items set forth herein. The Contractor shall record on daily reports any problems in complying with laws, regulations, ordinances, and corrective action taken in accordance with SECTION 01451 CONTRACTOR QUALITY CONTROL.

END OF SECTION

SECTION 02215

SURVEY INVESTIGATION, INSPECTION, AND OBSTRUCTION REMOVAL

PART 1 GENERAL

1.1 SCOPE

The work of this section consists of furnishing all plant, labor, equipment, and materials and performing all operations necessary for subsurface investigations, inspection trenching, dewatering, and removal of obstructions within a maximum of five (5) feet on both sides of the cutoff wall centerline alignment. The Contractor shall perform the work in accordance with these specifications unless directed otherwise by the Contracting Officer. Investigations shall be performed to locate, identify, inspect, and remove all subsurface obstructions or buried structures that would prevent installation of the cutoff wall. Obstructions to be removed include abandoned petroleum pipelines; abandoned sanitary and storm sewers; abandoned manholes; abandoned power lines and conduits; outfall drainage structures; underground storage tanks (USTs) and their connected piping; concrete slabs; concrete foundations; building/construction debris from razing of previous on-site facilities; abandoned dock wall steel sheet and H-piles; and railroad ties/track. Removal of obstructions shall also include coordination for the termination and relocation with active utility and pipeline owners and service providers. The investigation includes inspection trenching and dewatering along the cutoff wall alignment to a depth of fifteen (15) feet. The obstruction removal work includes plugging, capping, and closure of all open pipes and conduits upon removal of the obstruction. All obstruction investigation, inspection trenching, and removal work shall be completed prior to the start of the cutoff wall installation.

1.2 References

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 698 (1991) Test Method for Laboratory Compaction Characteristics

ASTM D 1556 (1990) Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D 2167 (1994) Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber-Balloon Method

ASTM D 2487 (1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D 2922 (1991) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

U. S. ARMY CORPS OF ENGINEEERS ENGINEER MANUAL (EM)

EM 1110-1-1003 (1994) Engineering and Design, NAVSTAR Global Positioning System Surveying

EM 1110-1-1004 (1994) Engineering and Design, Deformation Monitoring and Control Surveying

EM 1110-1-1005 (1994) Engineering and Design, Topographic Surveying

EM 1110-1-1802 (1995) Engineering and Design, Geophysical Exploration for Engineering and Environmental Investigations Manual

EM 385-1-1 (1996) Safety and Health Requirements Manual, ENG Form 5044-R

1.3 DEFINITIONS

1.3.1 Satisfactory Materials

Satisfactory materials for use as fill or backfill shall consist of the on-site fill and silty sand. Satisfactory materials shall be soils that are free from both organic matter and frozen materials. This construction project may require handling hazardous and toxic waste (HTW) defined under the Resource Conservation and Recovery Act (RCRA) or the Toxic Substances Control Act (TSCA). Information on the various contaminants found in the site soils is provided in SECTION 00200 INFORMATION AVAILABLE TO BIDDERS. On-site soils containing contaminants are suitable for use as fill or backfill.

1.3.2 Unsatisfactory Materials

Unsatisfactory materials shall be materials that do not comply with the requirements for satisfactory materials. Unsatisfactory materials include, but are not limited to, those materials classified in ASTM D 2487, as PT, OH, OL, or those materials containing organic matter, frozen materials, or building/construction debris from razing of previous on-site facilities. Unsatisfactory materials also include any non-soil items including those that are listed in Paragraph 3.1.1, Objective.

1.4 SUBMITTAL

Government approval is required for submittals with a “GA” designation; submittals having an “FIO” designation are for information only. Submit the following in accordance with SECTION 01330 SUBMITTAL PROCEDURES. The Contractor’s Quality Control (QC) organization shall be responsible for certifying that all submittals are in compliance with the contract requirements.

SD-01 Data

Excavation, Handling, and Obstruction Removal Work Plan; GA.

No inspection trenching work shall be performed until the Excavation, Handling, and Obstruction Removal Work Plan is approved. Furthermore, no inspection trenching can begin until the dewatering process system (refer to SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS) has been installed to treat the liquid from excavation dewatering. The Contractor shall allow thirty (30) calendar days in the schedule for the Government's review of the Plan. No adjustment for time or money will be made if re-submittals of the plan are required due to deficiencies in the plan. At a minimum, the plan shall include:

a. Schedule of activities.
b. Method of dewatering.
c. Method of excavation and equipment to be used.
d. Method of sheeting, shoring, sloping, bracing, or trench boxes to be used. All excavations must comply with Occupational Safety and Health Administration (OSHA), and the design must be stamped by a registered structural engineer in the State of Indiana.
e. Storage methods for stockpiled soil and debris.

Site Survey and Investigation Plan; GA.

The Contractor shall submit a Site Survey and Investigation Plan to the Contracting Officer for approval. The Plan shall include a site survey and investigation schedule, all subcontractor information including schedules and sequencing of work, and equipment to be used. The Plan shall be submitted to the sing Officer at least thirty (30) days prior to the start of the inspection trenching.

SD-04 Drawings

Shoring, Sheeting, Bracing, Sloping, and/or Trench Boxes; FIO.

The Contractor is responsible for all excavation shoring and bracing, including trench boxes as necessary, to complete the obstruction location, identification, inspection, plugging, and removal work. The inspection trench and obstruction inspection/removal excavations will require some form of shoring, sheeting, bracing, and/or sloping. The Contractor shall submit a detailed plan prepared by a registered structural engineer. The Contractor shall submit all shoring, sheeting, bracing, and/or sloping details, plans, and sketches for trenching and obstruction removal operations to the Contracting Officer for review prior to installation. If trench boxes are to be used, the Contractor shall submit drawings and sketches for all proposed trench boxes required to perform and complete the work.

Obstruction Conditions and Closure Details; GA

The Contractor shall prepare detail drawings including plan and cross section details showing the condition, size, profile, material, location, and plugs for all obstruction removals. The drawings and details shall be in accordance with SECTION 01451 CONTRACTOR QUALITY CONTROL and SECTION 01780 CLOSEOUT SUBMITTALS. The Contractor shall submit obstruction condition and closure drawing details for all obstruction removal, termination, and applicable closure operations.

1.5 STOCKPILES AND DISPOSAL

1.5.1 Stockpile

A debris stockpile area is shown on the Drawings. All debris placed in the stockpile must be weighed using an on-site scale to be furnished by the Contractor. Copies of the scale certification must be supplied to the Contracting Officer prior to the start of the inspection trenching. This area may be

relocated with the Contracting Officer’s approval. The stockpile shall be kept in a neat and well-drained condition, giving due consideration to drainage at all times. Excavated satisfactory materials to be used for trench and excavation backfill shall be separately stockpiled. Stockpiles of satisfactory fill materials shall be protected from contamination that may destroy the quality and fitness of the stockpiled material. If the Contractor fails to protect the satisfactory fill stockpiles, and any material becomes unsatisfactory, such material shall be removed and stored for later disposal within the confined disposal facility, and replaced with satisfactory material from approved sources at no additional cost to the Government. Satisfactory fill material stockpiles can be temporarily located at a safe distance from the trench/excavation; however, at the conclusion of the project, any excess satisfactory materials are to be stockpiled in a single location approved by the Contracting Officer. In addition, any unsatisfactory soils shall also be stockpiled in a separate stockpile location approved by the Contracting Officer. For all stockpile locations, erosion and run-off shall be prevented as described in SECTION 01356 STORM WATER POLLUTION PREVENTION MEASURES. Stockpiling and stockpile maintenance shall be performed in accordance with SECTION 01410 ENVIRONMENTAL PROTECTION.

1.5.2 Disposal

The debris removed during investigations, inspection trenching, and pipeline closures shall be stockpiled on-site at the location shown on the Drawings. Erosion control around the stockpiled materials shall be as described in SECTION 01356 STORM WATER POLLUTION PREVENTION MEASURES. Underground storage tanks, petroleum piping, concrete and casings from well decommissioning, or other obstructions and debris shall also be stockpiled at this location after any explosion hazards have been mitigated.

1.6 DEWATERING

1.6.1 The Contractor shall note that the groundwater and free product levels at the site are high, often at or near the ground surface. Information on groundwater and free product levels is provided in SECTION 00320 GEOTECHNICAL DATA. Any trenching and excavations may encounter significant seepage and will likely require dewatering. The boring logs and groundwater level information included with these plans and specifications shall be thoroughly reviewed by the Contractor. Dewatering sufficient

to maintain the water and free product level at or below the inspection trench bottom is required. The Contractor is also responsible for all dewatering necessary to complete the obstruction location, identification, inspection, plugging, and removal work. All water pumped from the inspection trench and the excavations made for obstruction removal shall be treated in the dewatering process system as stated in SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS. Free product will be removed and disposed of in accordance with SECTION 02120 STORAGE, TRANSPORTATION, AND DISPOSAL OF HAZARDOUS MATERIALS AND FREE PRODUCT WASTES, and the treated water will be infiltrated back into the shallow aquifer.

1.7 CONSTRUCTION LIMITS

1.7.1 The Contractor shall perform all work within the work limits as shown on the Drawings. No personnel or equipment will be allowed on city traffic lanes or shoulder areas except when streets are closed to traffic. The Contractor is responsible for decontamination of personnel and equipment prior to exiting the project site as described in SECTION 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTW/UST) and SECTION 01100 GENERAL PROVISIONS. No trees, shrubs, or any other vegetation outside the work/construction limits shall be disturbed.

1.8 COORDINATION

1.8.1 The Contractor shall schedule a coordination meeting with local utility and pipeline owners prior to inspection trenching to investigate and to allow owners to identify and mark service closure locations through, to, from, and along the abandoned ECI refinery site. The Contractor shall notify the Contracting Officer five (5) days prior to the meeting. The Contractor shall notify the Contracting Officer prior to commencement of work and during this Contract, in addition to the appropriate utility or pipeline owner, in the event that an active utility or pipeline is discovered during the survey investigations and inspection work. The utility lines shown on the Drawings may be abandoned or active. Any utility lines discovered that were not shown on the Drawings also may be an active utility. For all utility lines encountered, whether shown on the Drawings or not, it is the Contractor’s responsibility to take the necessary actions to determine whether the utility line is abandoned or active.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 SURVEYS, INVESTIGATIONS AND INSPECTIONS REQUIREMENTS

3.1.1 Objective

The work of this section consists of furnishing all plant, labor, equipment, and materials to perform all operations necessary for subsurface investigations, inspection trenching, dewatering, and removal of obstructions within a maximum of five (5) feet on both sides of the cutoff wall centerline alignment. Investigations shall be performed to locate, identify, inspect, and remove all subsurface obstructions or buried structures that would prevent installation of the cutoff wall. The Contractor shall locate and identify all surface and subsurface obstructions crossing, adjacent to, or within five (5) feet on either side of the cutoff wall centerline alignment. Obstructions shall be removed not greater than five (5) feet on both sides of the cutoff wall centerline. The minimum obstruction removal distance shall be not less than one (1) foot from both exterior faces of the cutoff wall; shall be sufficient enough to install the cutoff wall to a depth which is at least five (5) feet deeper than the maximum expected depth as determined by the exploratory borings required by SECTION 02210 DRILLING, SAMPLING, AND TESTING OF BORINGS PRIOR TO PRODUCTION CUTOFF WALL INSTALLATION; and shall take into account any required work platform. All survey work shall be in accordance with EM 1110-1-1003, EM 1110-1-1004, and EM 1110-1-1802 as applicable to perform and complete the location, identification, and removal of obstructions. Subsurface features and obstructions for detection, characterization, and removal include any non-soil item including but not limited to:

a. Petroleum pipelines (abandoned or otherwise).
b. Gas lines (abandoned or otherwise).
c. Electric conduit/power lines(abandoned or otherwise).
d. Storm sewers, field tiles, and manholes (abandoned or otherwise).
e. Water lines (abandoned or otherwise).
f. Sanitary sewers (abandoned or otherwise).
g. Underground storage tanks (abandoned or otherwise).
h. Concrete foundations and reinforced concrete slabs.
i. Abandoned dock wall steel sheet pile, H-pile, and/or timber vertical or batter piles.
j. Abandoned drainage, gated outfall, recovery, and settling basin structures.
k. Building/construction debris from razing of previous on-site facilities.

l. Railroad tracks and railroad ties.

3.1.2 As-Builts

The Contractor shall prepare and maintain “as-built” drawings, which shall show all obstructions, piping, debris, etc., encountered during the work. For all obstructions, the as-built drawings shall show location, material type, dimensions, pipe diameters, depths, pipe invert elevation, lengths, type of plug installed, relocations, and all other information that adequately describes obstruction features, closure, and corrective activities for removal. The as-built drawings shall be prepared as specified in SECTION 01780 CLOSEOUT SUBMITTALS.

3.1.3 Surface and Subsurface Survey Investigation Requirements

Preliminary surveys and investigation information has been performed. (Refer to SECTION 00200 INFORMATION AVAILABLE TO BIDDERS.) Subsurface, drilling, sampling, and testing shall be performed as specified in SECTION 02210 DRILLING, SAMPLING, AND TESTING OF BORINGS PRIOR TO PRODUCTION CUTOFF WALL INSTALLATION. The Contractor is responsible for obtaining, selecting, operating, and maintaining appropriate equipment and materials to perform survey investigations and inspections. Field verification, location, horizontal, and vertical control surveys performed by the Contractor shall meet the standards and specifications of U.S. Army Corps of Engineers (USACE) THIRD ORDER CLASS II accuracy as defined in EM 1110-1-1004 "Deformation Monitoring and Control Surveying", Chapter 5:

a. Vertical Control: Only the existing vertical control data provided by the Corps of Engineers Chicago District office (NGVD 1929 datum) shall be used for vertical control. The Contractor shall establish additional vertical control as necessary. All vertical control established by the Contractor shall be tied and adjusted to the existing vertical control. Reciprocal trigonometric leveling techniques are acceptable for this work order (see USACE EM 1110-1-1005 item 4-31). GPS derived elevations are not acceptable for this work order.
b. Horizontal Control: Only the existing horizontal control data provided by this office (Indiana State Plane, West Zone, NAD 1927) shall be used for horizontal control. The Contractor shall establish additional horizontal control as necessary. All horizontal control established by the Contractor shall be tied and adjusted to the existing traverse points. All horizontal control use for the work order shall be shown (with symbols and annotation) on the

"Control Survey" level of the Microstation drawing. The "Control Survey" level drawing shall show adjusted bearings, distances, coordinates, and elevations of all control points. The error of closure shall be shown on the drawing.

3.1.3.1 Monumentation.

All benchmarks and traverse points established by the Contractor shall be permanent type makers (with rebar and cap in dirt areas, and spike and washer in paved surfaces). The Contractor shall record complete, concise (how to reach) descriptions of all monumentation set for this work. Standard USACE DA 1959 description cards are included in SECTION 00200 INFORMATION TO BIDDERS ATTACHMENT B.

3.1.3.2 Accuracy Requirements

Shall be based on a free (unconstrained) adjustment of the Contractor's survey observations and shall meet the point closure standard for USACE surveys:

a. Horizontal Control: THIRD ORDER CLASS II (1:5,000).
b. Vertical Control: THIRD ORDER (0.050 * square root of distance in miles).
c. Utility Location: All surveying (field and office procedures) done by the Contractor to locate above and below ground utilities and obstructions shall meet the standards and specifications defined in EM 1110-1-1005 "Topographic Surveying", Chapter 5, "Data Collection Procedures for the Total Station". All utility locations shall be accurate to 0.5 ft horizontally and 0.1 ft vertically. GPS derived elevations are not acceptable for this work.

3.1.3.3 Field Notes

Field notes shall be recorded in standard size hardbound field books following USACE specifications standards defined in EM 1110-1-1004 "Deformation Monitoring and Control Surveying", Chapter 7. Use of electronic USACE standard field note information must be shown on printouts of the electronic field book and bound in book form. Field notes shall contain all information the extent that the Corps of Engineers can reconstruct the survey and perform quality assurance checks.

3.2 EXCAVATION

3.2.1 General Requirements

Excavation shall consist of removal of material for the inspection trench for a minimum width of two (2) feet and to a depth of fifteen (15) feet below existing grade. The centerline of the inspection trench shall be the proposed centerline of the cutoff wall. Satisfactory material shall be used as backfill for the inspection trench. Excavated material not satisfactory for backfill shall be placed in the debris stockpile area. As defined in Paragraph 1.3.2, Unsatisfactory Materials, organic soils are considered unsatisfactory materials and shall not be used as backfill. Frozen soils are also considered unsatisfactory soils and shall not be used as backfill. Frozen soils shall be placed in the debris stockpile. If the Contractor elects to perform excavation activities during the winter months, any frozen soils excavated shall be stockpiled in the debris stockpile but will not be measured for payment as unsatisfactory materials. * ~~**Any excessive excavation, as determined by the Contracting Officer due to the fault or negligence of the Contractor, shall be backfilled to grade and shall be done by and at the expense of the Contractor**~~.* During construction, excavation and fill procedures shall be performed in a manner and sequence that will provide proper drainage at all times and in accordance with SECTION 1356 STORM WATER POLLUTION PREVENTION MEASURES and SECTION 1410 ENVIRONMENTAL PROTECTION. For any inspection trenches or excavations that are wider than the cutoff wall, the trench or excavation shall be backfilled and compacted. The backfill shall be placed in lifts with a maximum loose thickness of 8 inches, and shall be compacted to 95 percent of maximum dry density per ASTM D 698. The trench or excavation shall be kept dewatered during placement and compaction of the backfill. Density tests shall be performed at a frequency of once per 500 square feet per lift. If an excavation is less than 500 square feet, then one density test shall be performed on each lift of backfill placed. Field in-place dry density shall be determined in accordance with ASTM D 1556, ASTM D 2167, or ASTM D 2922. If ASTM D 2922 is used, a minimum of one in ten tests shall be checked using ASTM D 1556 or ASTM D 2167. Test results from ASTM D 1556 or ASTM D 2167 shall govern if there is a discrepancy with the ASTM D 2922 test results. One ASTM D 698 shall be performed for every 2000 cubic yards of backfill placed. Areas that fail shall be immediately recompacted and tested. Excavations or trenches which are equal to or narrower than the cutoff wall shall be backfilled but do not require compaction.

3.2.2 Inspection Trench Requirements

An inspection trench shall be installed for the total length of

the cutoff wall. The trench shall be excavated to a depth of fifteen (15) feet below existing grade and shall be a minimum of two (2) feet wide. Dewatering sufficient to maintain the water and free product level at or below the inspection trench bottom is required. Inspection trenching at the existing railroad crossings shall be performed after the railroad spur has been relocated. The inspection trench shall be used to locate those subsurface features and obstructions that require characterization and removal as listed in Paragraph 3.1.1, Objective. The utility lines shown on the Drawings may be abandoned or active. Any utility lines discovered which were not shown on the Drawings also may be an active utility. For all utility lines encountered, whether shown on the Drawings or not, it is the Contractor's responsibility to take the necessary actions to determine whether the utility line is abandoned or active. If the line is active, the Contractor shall immediately ***** ~~**inform**~~ **provide the Contracting Officer with documentation identifying the utility as active** ~~**the Contracting Officer**~~ *****, mark the location of the utility, backfill the inspection trench, skip over the unknown utility, and continue with the trench on the other side of the utility. If it is subsequently established that the utility is inactive, then the Contractor shall return, at a later date, to the location for excavating, removing and plugging, or capping the utility. The cost for terminating and backfilling the inspection trench, marking the location of the active utility, skipping over the active utility, and continuing with the trench on the other side of the active utility shall be incidental to the cost of the inspection trench. *** If the Contractor is required to return to the location to remove and plug the utility, the determination that the Contractor needs to return will be made within 30 calendar days after informing the Contracting Officer of the active utility. ***

3.2.3 Obstruction Inspection/Removal Excavation Requirements

Where further visual identification is required to satisfactorily identify and/or remove an obstruction, then an excavation shall be made at the location in question. The excavation shall be of sufficient size and depth to allow identification and removal of the utility, pipeline, and/or obstruction. Obstructions shall be removed not greater than five (5) feet on both sides of the cutoff wall centerline. The minimum obstruction removal distance shall be not less than one (1) foot from both exterior faces of the cutoff wall and shall be sufficient enough to install the cutoff wall. The Contractor is also responsible for all dewatering necessary to complete the

obstruction location, identification, inspection, plugging, and removal work. All excavations shall comply with Occupational Safety and Health Administration (OSHA) standards. Special attention shall be given to slopes that may be adversely affected by weather or moisture content. Where the excavated material is considered to be satisfactory, as defined in Paragraph 1.3.1, Satisfactory Materials, it shall be used to backfill the excavation. Organic or frozen soils shall not be used to backfill excavations or the inspection trench.

3.2.4 Obstruction Cap, Plug, and Closure Requirements

All pipes and tiles shall be plugged, capped, and/or closed to eliminate the possible loss of slurry during cutoff wall construction and the possible formation of seepage forces on the completed cutoff wall. For pipes 12 inches in diameter and less, mechanical plugs shall be used. As a minimum, the mechanical plug shall have a natural rubber “O” ring, which can be expanded to the inside diameter of the pipe using a wing nut. For pipes over 12 inches in diameter, the opening shall be sealed with concrete for a minimum distance equivalent to one (1) pipe diameter. The available information on the utilities and pipelines is included in Section 00200 INFORMATION AVAILABLE TO BIDDERS. The Contractor shall develop details for the plugs and concrete bulkhead, and submit it to the Contracting Officer for approval prior to commencement of the inspection trench.

* **Any fluids (oils, fuels etc.) that are found in the abandoned**
* **utility lines cannot be discarded onsite. The Contractor is**
* **responsible for catching and collecting all remaining utility**
* **line fluid material encountered. The Contractor must then pass**
* **these materials through the oil/water separator, and then**
* **complete subsequent disposal actions. The subsequent disposal**
* **requirements are described in SECTION 01410 ENVIRONMENTAL**
* **PROTECTION and SECTION 02120 STORAGE, TRANSPORTATION, AND**
* **DISPOSAL OF HAZARDOUS MATERIAL AND FREE PRODUCT WASTES.**

Following the capping/closure of the pipe, any excavation that is wider than the cutoff wall width shall be filled with compacted backfill. The backfill shall be placed in 8-inch lifts and compacted to 95% of maximum Standard Proctor dry density per ASTM D 698. The excavation shall be kept dewatered during placement and compaction of the backfill.

3.3 FROZEN GROUND

No backfill shall be placed upon natural ground or previously placed backfill that is frozen or covered with snow or ice where

obstruction removal activities are performed.

Under no circumstances shall frozen earth, snow, or ice be placed in the backfill in locations where obstruction removal activities are performed. If the Contractor elects to perform excavation activities during the winter months, any frozen soils excavated shall be stockpiled in the debris stockpile, but will not be measured for payment as unsatisfactory materials.

3.4 QUALITY CONTROL

3.4.1 The Contractor shall establish and maintain quality control for work under this section to assure compliance with contract requirements, and maintain records of his quality control for all construction operations performed, including, but not limited to, the following:

a. Permits and licenses.
b. Observance of safety regulations.
c. Stripping.
d. Excavation.
e. Trenching.
f. Control and field verification surveys.
g. Drainage.
h. Filling and backfilling
i. Materials and obstruction disposition and closure.

3.4.2 A copy of the records of inspections and tests, as well as the records of corrective actions taken, shall be furnished to the Government as directed by the Contracting Officer in accordance with SECTION 01451 CONTRACTOR QUALITY CONTROL and SECTION 01780 CLOSEOUT SUBMITTALS.

END OF SECTION

SECTION 02260

SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL

INDEX

SECTION 02260

SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL

PART 1 GENERAL

1.1 SCOPE

1.1.1 Requirements for Proposals Based on Alternate Methods of Cutoff Wall Construction

This specification section is based on the installation of a soil-bentonite slurry trench cutoff wall having a minimum width of 30 inches and an in-situ permeability of no more than $1.0x10^{-7}$ cm/sec. As discussed in SECTION 00115 PROCEDURES FOR SUBMITTAL OF OFFERS, proposals using methods of cutoff wall construction other than the soil-bentonite slurry trench method that will result in equal or better performance will be considered. The alternate method must be able to be constructed such that the ratio of permeability (in feet/day) to width of wall (feet) is less than or equal to that for a 30-inch wide wall with an in-situ permeability of $1.0x10^{-7}$ cm/sec. The wall must also have the ability to withstand a gradient of at least ten (10) feet.

In addition to meeting the requirements of SECTION 00115, offerors of alternate cutoff wall methods must supply the following documentation with their proposal. Offerors shall provide quality control and quality assurance test data and procedure documentation from previous projects. This documentation must also concisely describe the tests and methods proposed to document installation and performance of the alternate method to the minimum specified permeability, wall width, depth, and alignment criteria for the project. Offerors are cautioned that alternate proposals will be evaluated using available literature, as well as client references who can attest to achievement of the specified performance criteria for the projects cited, in addition to the information in the submittal as a part of the technical/quality evaluation discussed in SECTION 00130 PROPOSAL EVALUATION CRITERIA.

The offeror of a proposed alternate cutoff wall method shall provide proposed replacement specifications with their proposal. The proposed replacement specifications shall contain sufficient detail to manage safety, quality, cost, and schedule of the work in a manner that documents performance and promptly identifies and implements corrective action procedures to correct work that does not comply with the proposed technical specifications. The

replacement specifications shall contain all the elements addressed in this specification section including, but not limited to: chemical compatibility testing; cutoff wall implementation plan; equipment; materials and quality control testing procedures to be used to document achievement of the minimum specified in-situ wall permeability; and wall width criteria. The replacement specifications for the alternate method proposed will be subject to performance requirements at least as stringent as those specified in this specification section.

The offeror of a proposed alternate method shall also provide a proposed specification and plan sheet(s) with details for the cutoff wall test section. The proposed specification and plan sheet(s) shall be submitted with their proposal. The test section specification must include the following: pump test monitoring, borings, in-situ sampling of the wall, compliance report, and performance requirements at least as stringent as those specified in this specification section. The test section will be measured as one unit regardless of the number of test sections performed. Not more than 2 test sections will be allowed to meet the performance requirements of the proposed alternate cutoff wall method. If these 2 test sections fail, the Contractor will be required to install a soil-bentonite slurry trench production cutoff wall and install an additional test section at no additional cost to the Government until the test section passes the performance criteria. The offeror must provide as a backup a soil-bentonite slurry trench cutoff wall method which fully complies with these plans and specifications that will be implemented, at no additional cost to the Government, in the event the alternate method cannot perform satisfactorily, and describe how adjustments will be made to maintain the original construction schedule.

1.1.2 Soil-bentonite Slurry Trench Cutoff Wall Method

The work covered by this section consists of furnishing all plant, labor, equipment, and materials, and performing all operations in connection with the installation of the soil-bentonite slurry trench cutoff wall in accordance with these specifications and applicable drawings and as directed by the Contracting Officer. The mix design for the soil-bentonite slurry trench cutoff wall is the responsibility of the Contractor. The soil-bentonite slurry trench cutoff wall shall have a minimum width of 30 inches. The soil-bentonite backfill shall have a permeability of no more than 1.0×10^{-7} cm/sec based on samples taken of the test section and production walls. The

completed soil-bentonite slurry trench cutoff wall must be chemically compatible with groundwater and soil conditions at the site and the water used by the Contractor for his mixing operations. The Contractor shall submit evidence that the soil-bentonite slurry trench cutoff wall material is chemically compatible with the groundwater and soil conditions. The above requirements are in addition to the other requirements as stated in this section.

The Contractor shall schedule and coordinate his operations in accordance with SECTION 01100 GENERAL PROVISIONS and SECTION 01110 SUMMARY OF WORK. A summary of the requirements for the construction sequencing of the work is provided in this paragraph. The contractor shall begin the soil-bentonite slurry trench cutoff wall at Station 78+00. The contractor shall proceed in a clockwise direction around the site (north-east-south-west-north) until the wall is constructed. The contractor shall complete the soil-bentonite slurry trench cutoff wall between stations 78+00 and 45+00 first to allow for the relocation of the railroad track on the east side of the site. From the railroad south, the cutoff wall installation will proceed to approximately STA. 20+15.9. *** The BP Amoco/ARCO oil recovery system will remain on-site during the entire contract duration and as such no cutoff wall will be constructed along the southern 2000 feet of the site (approximate STA 20+15.9 to 0+00). After completing the southeast end of the cutoff wall (approximate STA 20+15.9) the Contractor is to proceed to the southwest corner of the site and proceed with the cutoff wall installation from STA 107+00 northward. The southeast and southwest ends of the cutoff wall shall be vertical and will be located approximately 40 feet north of the canal face (refer to the drawings).*** The Contractor shall not construct the wall in the area of the railroad tracks on the west side of the site (approximately between stations 89+00 and 78+00) until the railroad is relocated or relocated to a point where construction does not interfere with completing the railroad relocation.

As required by SECTION 01110, the Contractor shall develop a Project Construction Management and Operation Plan in addition to a Project Schedule of Work. The borings and laboratory testing required by SECTION 02210 DRILLING, SAMPLING, AND TESTING OF BORINGS PRIOR TO PRODUCTION CUTOFF WALL INSTALLATION (i.e., the borings every 200 feet along the alignment) and the well sampling required for the compatibility testing shall be completed prior to the start of the chemical compatibility testing. The compatibility testing, as required by Paragraph 1.5, Submittals, must be completed and approved prior to the

construction of the test section. The Preconstruction Chemical Compatibility Test Results Report shall be submitted a minimum of thirty (30) days prior to the planned start of the test section. The Contractor shall submit the Test Section Compliance Report a minimum of thirty (30) days prior to the planned start date of the production soil-bentonite slurry trench cutoff wall. Furthermore, no work shall begin on the production cutoff wall until the Test Section Compliance Report has been approved and the inspection trench/obstruction removal work has been completed. No inspection trenching work shall be performed until the Excavation, Handling, and Obstruction Removal Work Plan is approved. Furthermore, no inspection trenching can begin until the dewatering process system (refer to SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS) has been installed to treat the liquid from excavation dewatering. The requirements to locate, identify, inspect, and remove all subsurface obstructions or buried structures that would prevent installation of the test section and production cutoff walls is provided in SECTION 02215. The Contractor shall allow thirty (30) calendar days in the schedule for the Government's review of each of the Plans or Reports. No adjustment for time or money will be made if re-submittals of any Plans or Reports are required due to deficiencies.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN PETROLEUM INSTITUTE (API)

API RP 13B-1 (1997) Standard Procedure for Field Testing Water-Based Drilling Fluids

API Spec 13A (1993) Drilling-Fluid Materials

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 143 (1990a) Slump of Hydraulic Cement Concrete

ASTM D 422 (1963; R 1990) Particle-Size Analysis of Soils (Hydrometer and Sieve Analysis)

ASTM D 698 (1991) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-1bf/cu. ft. (600 kN-m/cu. m.))

ASTM D 1587 (1994) Thin-Walled Tube Geotechnical Sampling of Soils

ASTM D 2216 (1992) Laboratory Determination of Water (Moisture) Content of Soil and Rock

ASTM D 2487 (1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D 4318 (1995a) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ASTM D 5084 (1990; R 1997) Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

U.S. ARMY CORPS OF ENGINEERS ENGINEER MANUALS (EM)

EM 1110-1-1906 (1996) Soil Sampling

U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)

EPA 600/4-79/020 (1984) Methods for Chemical Analysis of Water and Wastes

1.3 DEFINITIONS

The terms used in this section are defined as follows:

1.3.1 Slurry Trench Cutoff Wall

The slurry trench cutoff wall is a low permeability wall excavated or placed through the existing ground or prepared working surface down to the required key-in distance into the key stratum.

1.3.2 Slurry Method of Excavation

The slurry method of excavation consists of excavating a vertical walled trench and at the same time keeping the trench filled with a bentonite slurry mixture. The purpose of the slurry is to support the walls of the trench until the backfill can set.

1.3.3 Bentonite

Bentonite is an ultrafine natural clay whose principal mineral constituent is sodium cation montmorillonite.

1.3.4 Slurry

Slurry is a stable colloidal mixture of bentonite and water.

1.3.5 Soil-Bentonite Backfill

Soil-bentonite backfill is a homogeneous mixture of material produced by mixing soil with bentonite that is used as the final filling of the slurry trench to construct the soil-bentonite slurry trench cutoff wall.

1.3.6 Working Surface

The working surface is the top of the existing ground surface or prepared work platform surface from which the slurry trench shall be constructed. The elevations and materials of the work platform shall be as specified in Paragraph 3.4, Soil-Bentonite Slurry Trench Cutoff Wall Construction.

1.3.7 Key Stratum

The key stratum is the relatively impermeable soil unit into which the bottom of the slurry trench is to penetrate. This key stratum is silty clay. Silty clay is material defined as “CL” in accordance with ASTM D 2487.

1.3.8 Key-In Distance

The key-in distance is the distance that the bottom of the slurry trench extends into the key stratum. The minimum key-in distance shall be three (3) feet.

1.4 PERFORMANCE REQUIREMENTS

The Government may perform Quality Assurance testing on any or all aspects of the work using the laboratory and equipment furnished by the Contractor. The Government testing will in no way relieve the Contractor of the responsibility of performing tests necessary to meet the construction requirements. The Contractor shall provide the equipment and laboratory space to Government personnel on demand, and these services shall be considered a subsidiary obligation of the soil-bentonite slurry trench cutoff wall construction. All routine testing procedures

being conducted by the Contractor shall be available for inspection by the Contracting Officer at any time.

1.5 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Preconstruction Chemical Compatibility Testing Plan; GA.

The Contractor shall provide a plan providing a list of test equipment, procedures, and materials to be used to develop and verify the chemical compatibility of the soil-bentonite backfill mix.

Soil-bentonite Slurry Trench Cutoff Wall Implementation Plan; GA.

The Contractor shall provide a plan describing the general work sequence and layout of operations. The layout of operations shall include scale drawings that depict slurry and backfill preparation and storage areas. The plan shall describe Contractor equipment; all aspects of the construction and monitoring of the Test Section; method of trench excavation; use or on-site disposal of excavated material; bottom cleaning, slurry preparation and maintenance; soil-bentonite backfill preparation and placement; and site clean-up. The plan shall provide a description of quality control equipment and test procedures and frequency; sample test forms for reporting test results; and off-site laboratory proposed for use. The Contractor shall submit the Soil-bentonite Slurry Trench Cutoff Wall Implementation Plan a minimum of sixty (60) days prior to the start of test section construction. Additional requirements of the Implementation Plan are provided in Paragraph 3.3, Soil-Bentonite Slurry Trench Cutoff Wall Implementation Plan.

SD-04 Drawings

As-Built Profile and Drawing; FIO.

The Contractor shall provide a scale drawing showing the profile of the completed soil-bentonite slurry trench cutoff wall with the limits of soil-bentonite backfill placed clearly delineated.

The as-built drawings shall be submitted in accordance with SECTION 01780 CLOSEOUT SUBMITTALS.

SD-09 Reports

Preconstruction Chemical Compatibility Test Results Report; GA.

The Contractor shall provide a report that summarizes the procedures and results of the soil-bentonite backfill chemical compatibility testing. The report shall include, but not be limited to, the following tests:

a. The completed soil-bentonite slurry trench must be chemically compatible with groundwater and soil conditions at the site and with the water used by the Contractor to construct the slurry trench. Groundwater and soil analytical test results are provided in SECTION 00200 INFORMATION AVAILABLE TO BIDDERS. The Contractor shall submit evidence that the soil-bentonite backfill material is chemically compatible with the groundwater and soil conditions. The minimum required compatibility tests are provided in paragraphs b through f below. The required test solutions to be used in the compatibility testing are provided in Table 1 located at the end of this section. The Contractor is responsible for obtaining samples of the test solutions as well as the backfill. The Contractor shall submit the sampling procedures as part of the Preconstruction Chemical Compatibility Testing Plan. All oil and water generated during the test solution collection sampling (i.e., by bailing, pumping, or by other means) shall be treated in the dewatering process system as stated in SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS. Free product will be removed and disposed of in accordance with SECTION 02120 STORAGE, TRANSPORTATION, AND DISPOSAL OF HAZARDOUS MATERIALS AND FREE PRODUCTS WASTES, and the treated water will be infiltrated back into the shallow aquifer.

   The backfill to be used in the compatibility testing shall be obtained from four separate locations as follows. The first backfill sample shall be obtained as close as possible to monitoring well MW-33. The second backfill sample shall be obtained from the boring location that had the highest fill pH concentration, as required by SECTION 02210 DRILLING, SAMPLING, AND TESTING OF BORINGS PRIOR TO PRODUCTION CUTOFF WALL INSTALLATION. The third and fourth backfill sample locations will be determined by the Contracting Officer based on results of the laboratory particle-size analyses required by SECTION 02210. The four backfill samples shall be

representative of the materials from the ground surface to the depth anticipated for the slurry trench at that particular location. A particle-size analysis shall be performed on each backfill sample in accordance with ASTM D 422. The Contractor is responsible for obtaining a sufficient quantity of backfill from each location to perform all required testing. The borings and laboratory testing discussed in SECTION 02210 shall be completed prior to the start of the chemical compatibility testing.

b. Chemical Analysis of Test Solutions. The test solutions shall be tested for the parameters listed in Table 2 located at the end of this section.

c. Viscosity, Density and pH Tests of Bentonite Slurry. As a minimum, four (4) viscosity, density, and pH tests shall be performed on the bentonite slurry prepared in accordance with the methods specified in Table 3 located at the end of this section. The water used to prepare the slurry shall be the water that will be used to make the bentonite slurry during construction. The viscosity, density, and pH of the bentonite slurry shall be that specified in Table 3.

d. Filtrate Loss Test of Bentonite Slurry. Using each test solution, two filtrate loss tests shall be performed in accordance with the method specified in Table 3. The formation head used in the test shall be 100 psi. The maximum allowable filtrate loss shall be that specified in Table 3.

e. Short-term Permeability Tests. As a minimum, four flexible wall permeability tests (ASTM D 5084) shall be performed on each of the four backfill samples (for a total of sixteen tests). One test should be performed on a backfill mix representing the minimum required bentonite content (4% bentonite by dry weight of the soil-bentonite backfill); one test shall be performed on a backfill mix with a 0% bentonite content; one test shall be performed on a backfill mix with a 2% bentonite content; and one test shall be performed on a backfill mix with a 6% bentonite content. The water to be used for mixing during construction shall be used as permeate. During the test, observations of the potential of the backfill material to swell or shrink shall be made and documented.

Each test shall be run at a confining pressure of 0.5 tsf. The hydraulic gradient shall not exceed the maximum value recommended in the ASTM D 5084. For these short-term

permeability tests, the permeability determined at the conclusion of the test using the 4% bentonite content shall be no more than $5x10^{-8}$ cm/sec. If the permeability test result for any of the 4% bentonite samples is greater than $5x10^{-8}$ cm/sec, the fines content (soil particles finer than the openings of a No. 200 U.S. sieve as determined using ASTM D 422) shall be increased using off-site borrow material. The borrow shall be from a commercial quarry and shall be approved by the Contracting Officer.

The fines content shall be increased in 5% increments until the permeability is less than $5x10^{-8}$ cm/sec. This fines content will then become the minimum required fines content for the long-term compatibility testing and the test section and production walls. The Contractor can elect to increase the bentonite content above the 4% minimum provided that the permeability test result is no more than $5x10^{-8}$ cm/sec. This bentonite content will then become the minimum required bentonite content for the long-term compatibility testing and the test section and production walls. No separate payment will be made for importing off-site borrow material or increasing the bentonite content to meet the permeability requirements.

For every flexible wall test performed there shall be also a permeability test run on a duplicate soil-bentonite backfill sample using the API filter press cell modified to run fixed wall permeability tests (refer to API RP 13B-1). The filter press shall be modified to operate at a pressure of 0.5 tsf. The purpose of this testing is to attempt to correlate the "API" permeability results (in which results can be obtained in a few hours using on-site laboratory equipment) with the flexible wall permeability test results. Depending on the results of these API filter press permeability tests, it may be possible for the Contractor to use the filter press during construction of the test section and production cutoff walls, as a rapid indicator of what the flexible wall result will be. However, in all instances, the flexible wall permeameter results shall be the basis for acceptance of the soil-bentonite backfill. Testing frequencies during construction are provided in Paragraph 2.4.5, Soil-Bentonite Backfill Material, and Table 3.

f. Long-term Compatibility Tests of the Soil-bentonite Backfill. As a minimum, three flexible wall permeability tests (ASTM D 5084, Method A) shall be performed on each of the four soil-bentonite backfill mixes (for a total of twelve tests). The

three tests of each backfill mix correspond to using the three test solutions in Table 1 as permeates. The mix shall be prepared using the mix determined to be acceptable from the short-term test results but in no case shall the bentonite content be less than 4% (i.e., 4% bentonite by dry weight of the soil-bentonite backfill). Each test should be performed at a confining pressure of 0.5 tsf.

An initial or baseline permeability shall be established for each test by permeating the cell with at least 1.0 pore volume of the water to be used for mixing during construction. Each test shall then be carried out until a minimum of 1.0 pore volume of the test solution has been passed. The hydraulic gradient should not exceed the maximum value recommended in ASTM D 5084. Inflow and outflow measurements shall be taken during the tests to ensure that no leakage is in the system. For these compatibility tests, the permeability determined at the conclusion of the flexible wall tests shall be no more than $5x10^{-8}$ cm/sec.

Because of the relatively low permeability of the backfills being tested, it is likely that it will take three months or longer to pass the required pore volumes through the sample. The compatibility testing shall start after the completion of the soil borings. The compatibility testing must be completed and approved prior to the construction of the test section. The cutoff wall test section shall be constructed and approved prior to the beginning of construction of the production cutoff wall.

In addition to the twelve flexible wall tests using the test solutions as permeates, two additional flexible wall tests shall be conducted using the water to be used for mixing during construction as permeate. These two tests shall be performed on backfill obtained from MW-33. A total of 2.0 pore volumes shall be permeated through these two “control cells”.

Test Section Compliance Report; GA.

A report shall be prepared documenting the performance of the test section. The Contractor shall engage a qualified Professional Engineer to prepare or supervise the preparation of data for the test section performance report. As a minimum, the report shall include typed logs of the borings before and after the test section installation, drawings (i.e., a plan and profile as-built of the test section along with the soil

stratigraphy determined from the borings) and comprehensive engineering analysis that shows the test section's compliance with specified requirements. The Contractor shall submit the Test Section Compliance Report a minimum of thirty (30) days prior to the planned start date of the soil-bentonite slurry trench cutoff wall. No work shall begin on the soil-bentonite slurry trench cutoff wall until the Test Section Compliance Report has been approved. Additional requirements of the Test Section Compliance Report are provided in Paragraph 3.2, Test Section.

SD-13 Certificates

Bentonite Certificate; FIO.

The Contractor shall provide a copy of the test results from the bentonite manufacturer for each lot shipped to the site and a certificate of compliance stating that the bentonite complies with applicable standards.

SD-18 Records

Observation Well Levels; FIO.

Each observation well to be monitored on a daily basis is listed in Table 4 at the end of this section. The data required is discussed in Paragraph 1.8, Observation Wells.

Soundings, Measurements, and Surveys; FIO.

A record of soundings taken during construction of the slurry trench. These soundings shall also be presented on the As-Built Profile.

Bentonite Slurry Mix; FIO.

A record of bentonite slurry mix quantities, proportions of additives utilized, and adjustments in the slurry mix shall be provided.

Soil-Bentonite Backfill Material Mix; FIO.

A record of the soil-bentonite backfill material mix quantities and mix adjustments for each day's production shall be provided.

Quality Control Data; FIO.

The Contractor shall provide the results from quality control inspections, including a record of all materials, mix quantities and proportions, and material adjustments.

1.6 DELIVERY, STORAGE, AND HANDLING

The Contracting Officer shall be properly notified of scheduled delivery and unloading of the materials for the slurry trench. Materials delivered and placed in storage shall be protected from the weather, dirt, dust, or other contaminants. Damaged materials shall be removed from the site and replaced with materials that meet the specified requirements. Materials shall be handled in accordance with the manufacturer's recommendations.

1.7 EXPLORATORY BORINGS

Subsurface exploratory borings have been obtained by the Government to determine the character of materials to be excavated and to define the top of the key stratum. Locations of borings are shown on the drawings. Boring logs and laboratory data test results are included in SECTION 00320 GEOTECHNICAL DATA. The Contractor shall drill additional borings as required per SECTION 02210 DRILLING, SAMPLING, AND TESTING OF BORINGS PRIOR TO PRODUCTION CUTOFF WALL INSTALLATION. The borings and laboratory testing required in SECTION 02210 shall be completed prior to the start of the chemical compatibility testing.

1.8 OBSERVATION WELLS

Each observation well to be monitored on a daily basis is listed in Table 4 at the end of this section. Well locations are shown on the Drawings, and the Contracting Officer will mark them in the field. The Contractor shall determine the elevation of the top of each casing/riser and protector. The accuracy of the surveyed elevations shall be ±0.01 foot. If any change is made during construction in the top of the casing/riser or protector elevation, the Contractor shall establish the new top of casing/riser elevation and report it in writing to the Contracting Officer. The free product (if any) and water levels in each observation well shall be measured, on a daily basis, to the nearest 0.01 foot, and shall be reported as an elevation on a standard form on the same day as they are measured. The measurements shall be made using an electronic oil/water indicator graduated to 0.01 foot. If a floating free product hydrocarbon layer is encountered, the water level shall be corrected for the presence of the free product. The elevation

of the Lake George Canal Branch of the Indiana Harbor Canal shall also be measured and recorded on the forms. The forms shall be provided to the Contracting Officer on a weekly basis. Both paper and electronic (Microsoft Excel) forms shall be submitted. Any fluctuations noted that could be related to construction activities shall be reported immediately to the Contracting Officer. The Contractor shall begin monitoring the observation wells a minimum of thirty (30) days prior to the start of either the inspection trenching (refer to SECTION 02215) or the well sampling (required as part of the compatibility testing), based on whichever activity starts sooner. The monitoring shall continue until the contract is completed. Readings on all the observation wells shall be made at least once a day for each day the Contractor is on site and shall be made at least weekly during any extended shutdown periods. Any observation well that is damaged or becomes plugged in the opinion of the Contracting Officer as a result of the Contractor's negligence shall be repaired or washed out within five days at the Contractor's expense. If the observation well is destroyed, it shall be replaced, at no cost to the Government, as directed by the Contracting Officer.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Bentonite

The bentonite shall be sodium cation base montmorillonite powder that conforms to API Spec 13A, Sections 5, 12, and 13, and Table 3, located at the end of this section. No bentonite treated with peptizing agents will be allowed.

2.1.2 Water

The Contractor shall supply and condition water required for mixing with bentonite to produce slurry. The water shall comply with the standards specified in Table 3.

2.1.3 Backfill Material

The backfill material shall be obtained from material excavated from the slurry trench. The Contractor is advised that numerous contaminants, including polychlorinated biphenyls (PCBs), petroleum product, and metals are present in the soil and groundwater on-site as indicated in SECTION 00200 INFORMATION AVAILABLE TO BIDDERS. Backfill shall be free of debris, brush,

organic, or frozen material. Grain size analysis data for the site soils is provided in SECTION 00320 GEOTECHNICAL DATA. If the compatibility testing determines that off-site borrow material is needed as a source of supplemental fines, this borrow material shall be from a commercial quarry and shall be approved by the Contracting Officer. Material defined as “OH” or "OL" in accordance with ASTM D 2487 are not acceptable as borrow. Materials shall be thoroughly blended prior to mixing with bentonite slurry, and shall conform to the following gradation requirements as well as to the minimum fines content as determined during the compatibility testing.

Screen Size	Percent Passing by Dry Weight
3 inch	100
No. 4	Per Implementation Plan
No. 40	Per Implementation Plan
No. 200	Per compatibility testing

2.2 EQUIPMENT

The Contractor shall furnish the necessary plant and equipment for use on this project.

2.2.1 Trench Excavation Equipment

Excavation of the slurry trench cutoff wall shall be accomplished with any suitable earth-moving equipment, such as a backhoe and/or clamshell. Regardless of the equipment used, the bucket shall be capable of excavating the minimum required width in a single pass. Special chopping, chiseling, or other specialized equipment may be used as necessary to loosen dense soils. The equipment shall be able to reach at least five (5) feet deeper than the maximum expected depth as determined by the exploratory borings discussed in Paragraph 1.7, Exploratory Borings, and the reach shall take into account any required work platform.

2.2.2 Slurry Mixing and Cleaning Equipment

The slurry mixing plant shall be equipped with a high-speed/high-shear, colloidal mixer or a high-velocity/high pressure venturi jet mixer used in conjunction with a high-speed/high-shear centrifugal pump. Mixers shall be capable of achieving complete dispersion of bentonite and additives, and shall be capable of continually mixing the slurry to provide a uniform blended slurry. The slurry shall be mechanically or hydraulically agitated in the slurry storage facility to

maintain uniform properties throughout. Slurry cleaning equipment shall be available to reduce sand, sediment, or other solids as necessary to maintain the sand content or density requirements of the slurry in the trench.

2.2.3 Field Laboratory Equipment

The field laboratory shall contain as a minimum, but not be limited to, the following equipment:

a. 1 Mold and rod for slump test.
b. 2 Marsh funnel sets.
c. 1 Standard filter press.
d. 2 Mud balances (direct reading of density).
e. 1 Slurry sampler.
f. 2 Number 200 sieves.
g. 1 Set of standard sieves and sieve shaker.
h. 1 Oven for moisture content.
i. 1 Balance.
j. 1 pH meter.
k. 2 Mixers.
l. 1 Direct-indicating viscometer.
m. 2 Sand content sets.
n. 1 4 inch cylindrical mold.
o. 1 Mechanical liquid limit device.
p. 2 Modified API filter press for on-site permeability test.

2.3 MIXES

2.3.1 Initial Bentonite Slurry Mixture

The initial bentonite slurry mixture shall conform to the standards specified in Table 3. The percentage of dry bentonite by weight shall be per the Implementation Plan. A filter press at 100-psi using a test length of 30 minutes shall determine filtrate loss.

2.3.2 Trench Bentonite Slurry Mixture

The trench bentonite slurry mixture shall conform to the standards specified in Table 3.

2.3.3 Additives

Peptizing agents and bulking agents shall not be mixed with the slurry. Approved thinners or dispersants and flocculants, of the types used in the control of oil field drilling muds, may be

used to control standard properties of the slurry such as apparent viscosity, pH, and filtration characteristics.

2.3.4 Soil-Bentonite Backfill Material

The soil-bentonite backfill material, consisting of backfill, bentonite slurry, and a minimum of four percent (4%) dry bentonite shall be thoroughly mixed and shall conform to the standards specified in Table 3 and the Implementation Plan just prior to placement in the trench.

2.4 QUALITY CONTROL TESTING

The Contractor shall provide at least one Quality Control Inspector for slurry preparation and maintenance, trench excavation, and soil-bentonite backfill preparation and placement. A minimum of one Quality Control Inspector shall be on-site at all times for both the test section and the production cutoff wall. Mathematical calculations shall be checked by someone other than the person performing the original calculations.

2.4.1 Bentonite

A minimum of one (1) test for each specified requirement in Table 3 shall be performed for each truck or rail car shipment delivered to the site.

2.4.2 Water

A minimum of one (1) test for each specified requirement in Table 3 shall be performed for each water source used. Testing for total dissolved solids shall be in accordance with EPA 600/4-79/020, Method 160.3.

2.4.3 Backfill Material

One set of backfill material tests, as specified in Table 3, shall be performed for every 100 lineal feet of wall during the production cutoff wall and at least once every day. For the test section the testing shall be performed for every 20 lineal feet of wall.

2.4.4 Slurry Properties

Slurry shall be required to hydrate per the minimum time given in the Implementation Plan. The types of tests to be performed

on the slurry are specified in Table 3. The initial bentonite slurry shall be tested prior to placing in the trench and a minimum of two times each day per mixing plant. The bentonite slurry in the trench shall be sampled a minimum of two times each day (near the beginning and end of each day), at two depths; approximately two feet below the slurry surface and approximately two feet above the bottom of the trench. These samples shall be taken within five feet of the toe of the soil-bentonite backfill slope. Additional samples shall be obtained at the request of the Contracting Officer.

2.4.5 Soil-Bentonite Backfill Material

Sampling and testing shall be performed just prior to placing soil-bentonite backfill material in the trench. Slump cone tests shall be done at the rate of 1 per 100 lineal feet of wall and at least once every day. The density of the soil-bentonite backfill material shall be calculated using a 4-inch cylindrical mold as described in Paragraph 6 of ASTM D 698. Soil-bentonite backfill material shall be placed in the mold and rodded ten times. Additional soil-bentonite backfill shall then be added to fill the mold. The weight and volume of the molded soil-bentonite backfill shall then be used to determine the density. Density shall be determined at a rate of 1 per 100 lineal feet of wall and at least once every day. Particle-size analysis (ASTM D 422) and Atterberg Limits (ASTM D 4318) tests shall be performed every 100 lineal feet of wall and at least once every day, except for the test section where the tests will be performed every 20 lineal feet of wall.

For the production cutoff wall, one permeability test shall be performed every 25 lineal feet of wall using the API fixed-ring device for the filter press (API RP 13B-1). For every 100 lineal feet of wall, there shall be one test on a duplicate sample using a flexible wall permeameter (ASTM D 5084). For the test section, API tests and a flexible wall test on a duplicate sample shall be performed for every 20 lineal feet of wall. For both the test section and production cutoff walls, a minimum of one API and one flexible wall permeability test shall be performed each day plus one API and one flexible wall permeability test shall be performed on a sample taken from each of the cutoff corners. Test methods and procedures shall be submitted and approved prior to use. The permeability tests shall use the water to be used for mixing during construction as permeate. Flexible wall permeability tests shall be performed at an effective confining pressure of 0.5 tsf. For the flexible

wall test, the hydraulic gradient should not exceed the maximum value recommended in the ASTM D 5084.

The flexible wall permeameter results shall be the basis for acceptance of the soil-bentonite backfill. The permeability determined at the conclusion of the flexible wall test on the samples obtained from the test section and production walls shall be no more than $1.0x10^{-7}$ cm/sec. Area(s) of the test section or production walls that fail to meet the permeability requirement shall be removed to the location of the nearest passing test and replaced. It is to be noted that if additional soil-bentonite backfill has been placed prior to the completion of the flexible wall test on the failing mix, then acceptable portions of the wall may need to be removed in order to remove the soil-bentonite backfill that had failed. It is the responsibility of the contractor to determine if soil-bentonite backfill should be placed in the trench prior to the completion of the flexible wall permeability tests. All necessary repairs to the wall shall be made at no cost to the Government.

PART 3 EXECUTION

3.1 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL AND MIX DESIGN

The Contractor shall be fully responsible for design of the slurry wall cross-section, analysis of the trench’s stability, and design of the slurry and backfill mixes. The Contractor shall engage a Professional Engineer who is experienced in providing engineering services for designing soil-bentonite slurry trench cutoff walls that are similar to those proposed for use on this project. The design shall be compatible with the elevations, lines, grades, and cross-sections shown on the Drawings and in accordance with these specifications. The top of the completed slurry wall shall be no more than one foot below existing grade. The top of the soil-bentonite slurry trench cutoff wall cap shall be at the top of the working surface.

Slurry wall cross-section and mix design will be subject to Government approval based on the performance of a test section to be constructed in accordance with the Drawings and Paragraph 3.2, Test Section. The Contracting Officer will not allow adjustments to the mix design during construction of the slurry trench without written approval. The Government reserves the right to require a new test section to demonstrate the adjustments will result in a slurry trench satisfying the performance criterion. The completed slurry wall must meet the following performance criteria.

3.1.1 Wall Width and Permeability

The completed slurry wall must provide a continuous, homogeneous, relatively impermeable barrier to groundwater seepage. The soil-bentonite slurry trench cutoff wall shall have a minimum width of 30 inches. The soil-bentonite backfill material shall have a permeability of no more than $1x10^{-7}$ cm/sec based on samples taken of the wall. For the purposes of calculating the permeability of the soil-bentonite slurry trench cutoff wall, the permeability used shall be that determined based on samples taken of the wall.

3.2 TEST SECTION

The test section shall be constructed to the elevations, lines, grades, and cross-sections shown on the Drawings and in accordance with these specifications, unless otherwise directed by the Contracting Officer. The Contractor can locate the test section anywhere within the work limits, except the test section cannot form part of the production cutoff wall, provided the Contracting Officer approves the location. The test section and all observation and pumping wells are to remain in place for the entire duration of the contract and as such the test section location shall be carefully chosen as to not interfere with other site activities. In addition, the wells installed for the test section shall be read daily throughout the contract as discussed in Paragraph 1.8, Observation Wells. The Contractor shall install the soil-bentonite slurry trench cutoff wall test section using the same Implementation Plan elements proposed for the production cutoff wall. The Contractor shall submit the test section design and construction procedures as part of the Soil-Bentonite Slurry Trench Cutoff Wall Implementation Plan. The Contractor shall submit the Implementation Plan a minimum of sixty (60) days prior to the start of test section construction.

The specifications and tolerances, as provided in the proposed Implementation Plan, shall be used to construct the test section. The fines content of the backfill material used in the test section must be at least the minimum required fines content determined from the compatibility testing. If the fines content of the backfill at test section is less then the minimum value determined acceptable during the compatibility testing, then the fines content of the test section backfill shall be increased using off-site borrow material to at least this minimum value but to not more than ten percent (10%) greater than this minimum value.

The Contractor shall be responsible for constructing the test section to prevent surface runoff and precipitation from entering the test section through the open surface by means of a raised work platform, ditching, tarps, tents or other methods.

At the test section location, the Contractor shall drill five borings and install one pumping well and four observation wells as shown on the Drawings. Existing wells cannot be used for the test section. The borings shall be sampled continuously using a 2-inch O.D. split-spoon sampler from the ground surface until a minimum of five (5) feet of silty clay is penetrated in accordance with SECTION 02210 DRILLING, SAMPLING, AND TESTING OF BORINGS PRIOR TO PRODUCTION CUTOFF WALL INSTALLATION. Six particle-size analyses (ASTM D 422 including both hydrometer and sieve analyses) and six Atterberg limits (ASTM D 4318 on the portion of the sample passing the No. 200 sieve) shall be performed on sand samples from each boring drilled. Following sampling, the boring shall be converted to a well. The Contractor shall develop (i.e., by surging and purging the well of a minimum of 5 well volumes) the observation and pumping wells to be used during the pumping test. The Contractor shall submit the drilling, sampling, testing, and well installation and development procedures as part of the Implementation Plan.

Two additional borings and wells shall be installed within the test section and within 10 feet of each other. Each of these borings shall be sampled continuously using a 2-inch O.D. split-spoon sampler. One of these borings shall be drilled until 10 feet of silty clay is penetrated (approximately 45 feet deep) while the other shall be drilled until 20 feet of silty clay is penetrated. Following sampling, the borings shall be converted to 2-inch diameter PVC observation wells. A 2-foot long well screen shall be installed in the bottom of each boring with the sand pack extending approximately 1 foot above the top of the screen. Above the sand pack shall be a 3-foot thick bentonite pellet seal followed by a bentonite grout seal to the top of the working platform. These two, closely spaced (nested) observation wells will be used to measure pore pressures in the silty clay layer. The Contractor shall submit the drilling, sampling, well installation and development procedures for these two borings also as part of the Implementation Plan.

If a test section fails and is abandoned in favor of a new test section location then any wells installed by the Contractor for the failed test section shall be decommissioned per SECTION 02101, DECOMMISSIONING EXISTING WELLS. No separate payment will

be made for decommissioning any wells installed as part of the failed test section(s). Payment for decommissioning any wells installed as part of the failed test section(s) is included in the payment for the test section(s).

Any obstructions that are encountered during installation of the test section cutoff wall shall be removed in accordance with SECTION 02215 SURVEY INVESTIGATION, INSPECTION, AND OBSTRUCTION REMOVAL. All oil and water generated during the pump test and during any obstruction removal shall be treated in the dewatering process system as stated in SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS. Free product will be removed and disposed of in accordance with SECTION 02120 STORAGE, TRANSPORTATION, AND DISPOSAL OF HAZARDOUS MATERIALS AND FREE PRODUCTS WASTES and the treated water will be infiltrated back into the shallow aquifer.

In addition to the borings drilled to install the piezometers and pumping well, an additional boring is required at each of the test section corners (i.e., a total of four borings). These borings are to be drilled prior to installation of the soil-bentonite slurry trench cutoff wall test section and shall be drilled at the same time as the borings that are required per SECTION 02210. The borings shall be sampled continuously using a 2-inch O.D. split-spoon sampler from the ground surface until a minimum of five (5) feet of silty clay is penetrated in accordance with SECTION 02210. Six particle-size analysis (ASTM D 422 including both hydrometer and sieve analyses) and six Atterberg limits (ASTM D 4318 on the portion of the sample passing the No. 200 sieve) shall be performed on representative samples from each boring drilled. In addition, the pH from one sample of the fill from each boring shall be determined in accordance with ASTM D 4972. The samples to be tested shall be jointly decided by the Contractor and Contracting Officer. Following sampling, the boring shall be shall be tremie-grouted shut from the bottom of the borehole to the ground surface using a high-solids (30%) bentonite grout.

Following the installation of the test section cutoff wall and the successful performance of the pump test as discussed below, borings will again be drilled at the four corners (i.e., at the same approximate locations as the initial borings) plus four additional borings that will be at locations selected by the Contracting Officer based on observations made during construction of the test section. The soil-bentonite backfill material shall be sampled continuously using a hydraulic piston sampler to collect undisturbed, 3-inch diameter Shelby tubes

from the top of the wall until a minimum of two (2) feet of the natural silty clay is penetrated. The sampling shall be in accordance with ASTM D 1587. The Contractor shall provide a qualified, licensed Geologist or Engineer experienced in subsurface exploration to oversee all drilling and sampling operations. This individual shall be responsible for the preparation of a separate drilling log for each boring as discussed in SECTION 02210. All drilling, sampling, and Shelby tube extraction shall be performed in the presence of the Contracting Officer. All samples shall be sealed with wax in accordance with EM 1110-1-1906. These samples shall be protected from freezing and stored for a minimum of one hundred twenty (120) days. Following sampling, the boring shall be shall be tremie-grouted shut from the bottom of the borehole to the top of the work platform using a high-solids (30%) bentonite grout. The purpose of these eight borings is to verify that the Contractor's method is capable of installing a continuous wall without defects.

The Contractor shall establish the location of all boreholes and wells. The elevation of each borehole shall be determined within an accuracy of ±0.1 foot. The elevation of the top of the casing/riser for each well shall be determined within an accuracy of ±0.01 foot. The horizontal location of each borehole and well shall be determined within an accuracy of ±0.5 foot. All surveying, including test section layout, shall be performed under the direct supervision of a Land Surveyor registered in the State of Indiana. The Contractor shall provide a qualified, licensed Geologist or Engineer experienced in subsurface exploration to oversee all drilling, sampling, and well installation operations. This individual shall be responsible for the preparation of a separate drilling log and well as-built diagram for each boring. The typed boring logs (both prior to and after cutoff wall installation) and well as-builts shall be included in the Test Section Compliance Report.

Upon the completion of the installation of the test section, the Contractor shall lower the groundwater to below approximately Elevation (EL) 564. The level of the groundwater shall then be jointly monitored by the Contractor and the Contracting Officer to determine the rate of recharge within the test section. Quality Control Testing shall also be performed in accordance with the Implementation Plan. The performance of the test section will be judged in accordance with the performance criteria in Paragraph 3.1.1, Wall Width And Permeability, and listed below. The Contracting Officer will allow the proposed

slurry wall design and Implementation Plan to proceed based on the passing performance of the test section.

In order to determine the performance of the test section:

a. The Contractor shall measure and record water levels in all of the observation wells (6 total) and the pumping well as water is removed from within the test section. Water level measurements shall be obtained at 30-minute intervals (or more frequently) during pumping water out from inside the test section. Water level measurements during the drawdown phase shall be obtained using either transducers or a water level indicator.

b. The Contractor shall measure and record the water level in the adjacent observation wells outside the test section. The water level measurements shall be obtained concurrent to the water level measurements inside the test section.

c. Pumping shall be performed until all observation wells within the test section confirm the water level inside the test section is below EL 564. All water levels for the inside observation wells shall be within ±0.2 feet of each other and the pumping well (with the pump turned off) prior to commencing the recovery test.

d. Water level measurements shall be taken in the observation wells and the pumping well at least every 30 minutes during the recovery test. Water level measurements shall be obtained over a minimum 10-day period.

e. A Test Section Compliance Report shall be prepared documenting the performance of the test section. The Contractor shall engage a qualified Professional Engineer to prepare or supervise the preparation of data for the test section performance report. As a minimum, the report shall include drawings (i.e., a plan and profile as-built of the test section along with the soil stratigraphy determined from the borings) and comprehensive engineering analysis that shows the test section’s compliance with specified requirements. Additional requirements of the Test Section Compliance Report are provided in SD-09 REPORTS.

The test section shall be considered acceptable when the rise in water levels in each of the two shallow interior observation wells is less than 0.084 foot over a continuous 7-day period and when the water level is located between EL 564 and 566. Only transducers shall be used to measure the water levels during the recovery phase. The transducers used to measure the water level rise shall have an accuracy of ± 0.015 foot and shall automatically compensate for barometric pressure changes.

Unless otherwise approved by the Contracting Officer, only measurements within this range (EL 564 and 566) will be considered acceptable for evaluation of slurry wall performance. Also, only water level measurements after day 3 shall be used to assess acceptance.

The acceptance criteria of 0.084 foot for a 7-day period (i.e., 0.012 foot per day) is based on the following relationships and assumptions:

DuPuit Equation: $q'=0.5k(h_1^2-h_2^2)/w$

Where: q'= flow per foot of slurry wall

K = permeability of slurry wall (not greater than 2.8×10^{-4} ft/day)

h_1 = head outside test section (30 feet)

h_2 = head inside test section (10 feet)

w = width of slurry wall (assumed to be the minimum required; 2.5 feet)

and: $H_{IB}=[(Q\times t\times h)/V_v] + h_2$

Where: H_{IB} = head inside test section (to be determined)

Q = flow into test section ($q'\times L$)

L = length of test section (50 feet $\times$ 4 walls = 200 feet)

t = duration of test (days)

h = height of test section (h_1-h_2)

V_v = Volume of voids (total volume of test section $\times$ n_{eff})

n_{eff} = Effective Porosity (air-filled voids after draining, assumed to be 0.3 for fine sands)

(Note that the performance criteria are based on the assumed parameters given. The Contractor shall make such calculations as required should the initial drawdown and test elevation differ from that assumed. The water level must be drawn down to EL 564 or lower.)

If the test section does not pass the performance criteria, the Contractor may at his option: 1) provide data and supplemental backup documentation to demonstrate that one or more of the

parameters in the above listed relationships should be revised; or 2) the Contractor will be required to make revisions to the slurry wall design and/or Implementation Plan and install additional test sections at no additional cost to the Government until the test section passes the performance criteria.

The Soil-bentonite Slurry Trench Cutoff Wall Implementation Plan, as described in Paragraph 3.3, shall be finalized based on the passing performance Test Section, including the materials and methods used to construct the Test Section. The slurry wall is to be constructed in accordance with the Implementation Plan once it is approved based on the performance of the Test Section. The test section and all observation and pumping wells are to remain in place for the entire duration of the contract. Any portion of the wall, test section, or wells damaged by the Contractor shall be replaced at no cost to the Government. The free product and water levels in each observation well and pumping well shall be measured on a daily basis for the entire duration of the contract in accordance with Paragraph 1.8, Observation Wells.

3.3 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL IMPLEMENTATION PLAN

The Contractor shall develop and submit a Soil-Bentonite Slurry Trench Cutoff Wall Implementation Plan fully describing the soil-bentonite slurry trench cutoff wall design, and all equipment and procedures that will be followed to construct the soil-bentonite slurry trench cutoff wall. The Contractor shall submit the Soil-bentonite Slurry Trench Cutoff Wall Implementation Plan a minimum of sixty (60) days prior to the start of test section construction. The plan shall include, but not be limited to, the following aspects of the work:

a. Slurry Wall Design. The Contractor shall provide drawings of the cross-section design of the slurry wall. The drawings shall include, but are not limited to, the width of the slurry wall, type of backfill material, any proposed alignment changes due to the limitations of the proposed equipment, detail of bottom cleaning, and details of the slurry wall cap (including trench cover requirements at approved heavy equipment crossing points as designated in the Implementation Plan). The Contractor shall also demonstrate that the slurry wall design, mix design, and placement methods shall maintain a stable trench and resist hydrostatic forces including work platform requirements.
b. Test Section. The Contractor shall include drawings and information on all aspects of the construction and monitoring

of the Test Section in accordance with Paragraph 3.2, Test Section. Information shall include aspects of the Implementation Plan (design, procedures, testing) as applicable to the Test Section, and any grading or other methods (e.g., tarp, tent, etc.) to ensure that the section is isolated from precipitation runoff.

c. Mix Designs and Mix Component Materials. The Contractor shall provide proportions of slurry mixes, backfill mixes, source and quality data, and acceptable deviations from the mix proportions that based on the chemical compatibility testing will still result in a soil-bentonite slurry trench cutoff wall satisfying the performance criteria. The Contractor shall provide detailed explanations, including test results, of any departure from Corps of Engineers guidelines. Corps of Engineer guidelines are provided in Tables 3 and 4.

d. Subsurface Drilling Procedures. The Contractor shall develop boring location plan and profile drawings as required by SECTION 02210 DRILLING, SAMPLING, AND TESTING OF BORINGS PRIOR TO PRODUCTION CUTOFF WALL INSTALLATION.

e. Equipment. The Contractor shall submit data on the equipment to be used mixing the materials and construction of the slurry wall; equipment to be used for earthwork; and equipment to be used in the Contractor’s Quality Control testing.

f. Construction Procedures. The Contractor shall submit procedures for work platform construction, mixing and placing slurry, cleaning of slurry, preparation of trench bottom, mixing and placing backfill, slurry trench construction, cap construction, and restoration.

g. Disposal. The Contractor shall provide procedures and locations for disposal of excess waste materials in accordance with Paragraph 3.4.14, On-Site Disposal and Paragraph 3.4.15, Off-Site Disposal.

h. Quality Control Plan. The information provided shall include the tests to be run; the property the test will be measuring; the test procedure and/or applicable Standard; the frequency of test; passing and failing acceptance criteria (including tolerances); and a statement as to the purpose and applicability of the test in regards to Quality Control of the soil-bentonite slurry trench cutoff wall performance. The Contractor shall provide detailed explanations, including test results, of any departure from Corps of Engineers guidelines. Corps of Engineers guidelines are provided in Table 3. The Contractor shall also identify the responsible individuals (and organization if a subcontractor) that will be responsible for Contractor Quality Control testing and reporting.

i. Record Keeping. The Contractor shall provide the forms and procedures for record keeping, and the procedures for providing the records to the Contracting Officer.
j. Cleanup. The Contractor shall provide cleanup procedures to be used to maintain the site roadways and other areas of the site in suitable condition in accordance with SECTION 01410 ENVIRONMENTAL PROTECTION, and the cleanup procedures to be used upon completion of the work to leave the site in a clean condition.

The Contractor may submit portions of the Soil-Bentonite Slurry Trench Cutoff Wall Implementation Plan (e.g., Test Section Plan and Procedures) for interim or final approval prior to submittal of the final Implementation Plan. Approval of the final Soil-Bentonite Slurry Trench Cutoff Wall Implementation Plan will be based upon a passing performance of the test section and approval of the Test Section Compliance Report. The Contractor will be required to revise the Soil-Bentonite Slurry Trench Cutoff Wall Implementation Plan or portions of the Implementation Plan, at no additional cost to the Government, should the test section fail or any other portion of the Implementation Plan prove to be unacceptable. The Contractor shall submit the Test Section Compliance Report a minimum of thirty (30) days prior to the planned start date of the soil-bentonite slurry trench cutoff wall. No work shall begin on the soil-bentonite slurry trench cutoff wall until the Test Section Compliance Report has been approved.

3.4 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL CONSTRUCTION

3.4.1 General

The slurry trench shall be constructed to the elevations, lines, grades, and cross-sections as detailed in the approved Soil-bentonite Slurry Trench Cutoff Wall Implementation Plan and in accordance with these specifications, unless otherwise directed by the Contracting Officer. The Contractor shall submit the Soil-Bentonite Slurry Trench Cutoff Wall Implementation Plan a minimum of sixty (60) days prior to the start of test section construction. The Contractor shall submit the Test Section Compliance Report a minimum of thirty (30) days prior to the planned start date of the soil-bentonite slurry trench cutoff wall. No work shall begin on the soil-bentonite slurry trench cutoff wall until the Test Section Compliance Report has been approved.

3.4.2 Working Surface

The working surface from which the slurry trench is to be constructed is defined in Paragraph 1.3.6, Working Surface. Groundwater and free product levels have been encountered in the site monitoring wells at a depth of less than one foot below the existing ground surface. Groundwater and free product levels as measured in the site monitoring wells are included in SECTION 00320 GEOTECHNICAL DATA. The Contractor shall be responsible for grading and constructing a work platform as necessary to insure the stability of the trench. The locations and dimensions of the work platform shall be shown in the Implementation Plan. Earthwork for construction of the work platform shall be in accordance with the Implementation Plan. On-site borrow material can be used for work platform construction. A potential borrow area is shown on the Drawings. The Contractor shall submit all proposed borrow locations and geometrics of the borrow pit slopes and bottom elevation to the Contracting Officer for approval. Any obstructions which are encountered during excavation of the borrow pit shall be removed in accordance with SECTION 02215 SURVEY INVESTIGATION, INSPECTION, AND OBSTRUCTION REMOVAL. All oil and water generated during any obstruction removal shall be treated in the dewatering process system as stated in SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS. No separate payment will be made for obstruction removal or oil/water treatment required as part of the borrow area excavation. Following completion of the cutoff wall the top six (6) inches (or more if contaminated with slurry) of the platform shall be removed and stockpiled in the designated stockpile area shown on the Drawings. The remainder of the platform shall be removed and stockpiled in an area designated by the Contracting Officer. Any earthwork operations (e.g., work platform construction, borrow pit excavation) must comply with the erosion control measures required by SECTION 01356 STORM WATER POLLUTION PREVENTION MEASURES.

3.4.3 Excavation

The excavation method shall provide a vertical (within 2 percent) continuous trench to the required depth along the centerline of the excavation. The slurry trench shall key a minimum of three (3) feet into the silty clay stratum. The Contracting Officer may direct the Contractor to modify the trench depth based on examination of bucket cuttings or drive samples. The toe of the slope of the trench excavation shall not precede the toe of the soil-bentonite backfill slope by less than thirty (30) feet or more than one hundred (100) feet. At

the intersection of two (2) straight-line segments, the trench excavation shall extend a minimum of five (5) feet beyond the outside of the intersection to the full depth. If trench excavation overlaps into formerly completed slurry trench, the excavation shall extend a minimum of ten (10) feet into previously placed soil-bentonite backfill at all depths. That section of soil-bentonite backfill material that is removed and rebackfilled shall be accomplished at no additional expense to the Government.

3.4.4 Slurry Placement and Maintenance

Slurry shall be introduced into the trench at the time excavation begins. If the density or sand content of the slurry in the trench does not conform to the standards specified in Table 3, the excess solids shall be removed from the slurry using approved methods or the slurry shall be replaced with fresh slurry. Sufficient personnel, equipment, slurry storage areas, and prepared slurry materials shall be ready to raise the slurry level at any time in the excavated trench. Slurry shall not be diluted by surface water. Conditioning of the slurry may require recirculation through a shaker screen or the addition of approved additives.

3.4.5 Excavated Material

Material excavated from the trench meeting the requirements of Paragraph 2.1.3, Backfill Material, may be used as backfill. Material not used in the backfill mix shall be placed in the designated stockpile areas shown on the Drawings. Materials placed in the stockpile areas shall be graded to provide drainage.

3.4.6 Stability

The Contractor shall be responsible for insuring and maintaining the stability of the excavated trench at all times for its full length and depth. As discussed in Paragraph 3.4.2, Working Surface, the Contractor shall be responsible for constructing a work platform as necessary to ensure the stability of the trench. The Contractor shall control surcharges from all excavation and backfilling equipment, waste, berm construction, backfill stockpiles, and any other loading situations including loads from the work platform and railroad tracks that may affect trench stability. It is the Contractor’s sole responsibility to ensure that the mixing of backfill and any stockpiles do not affect the open trench stability. Slopes of stockpiles and

excavated material shall be no steeper than 1 vertical to 2 horizontal and no higher than ten (10) feet above the work platform. In the event of failure of the trench walls prior to completion of backfilling, the Contractor shall at his expense re-excavate the trench and remove all material displaced into the trench and take corrective action to prevent further deterioration.

3.4.7 Continuity

The Contractor shall demonstrate the continuity of completed sections of the trench by running the backhoe arm or a pig through the slurry, or by another method as per the approved Implementation Plan. Contractor must demonstrate that completed sections are continuous and contain no anomalies.

3.4.8 Trench Cleaning

As a minimum, unless otherwise approved, the trench bottom shall be cleaned at the start of each day. If soil-bentonite backfill placement operations have ceased for longer than *** 72 hours or there is evidence of a collapse ***, the face of the soil-bentonite backfill slope shall be cleaned prior to the placement of additional soil-bentonite backfill. The trench bottom shall be cleaned by an air lift pump or other suitable equipment to ensure removal of sand, gravel, sediment, and other material left in the trench during excavation and/or which has settled out of the slurry. Cleaning equipment shall not remove material from the walls of the trench. The Contracting Officer may require more frequent cleaning.

3.4.9 Soil-Bentonite Backfill Mixing

The soil-bentonite backfill material shall be thoroughly mixed into a homogeneous mass, free from large lumps or clods of soil or pockets of fines, sand, or gravel. The equipment used for the mixing and placing of the backfill material including, but not limited to, the bulldozers, disks, harrows, monitor patrols, and haul trucks, shall be capable of mixing backfill materials into a homogeneous mixture. No clods larger than three (3) inches will be allowed. All particles shall be coated with slurry. The soil-bentonite backfill material may be sluiced with slurry during the mixing operations. Sluicing with water is not permitted. The soil-bentonite backfill material shall be mixed in a separate mixing location or along the side of the trench. When mixing the soil-bentonite backfill material along the side of the trench, heavy equipment such as bulldozers shall

not operate in a back and forth fashion, paralleling the open trench, closer than fifteen (15) feet from the lip of the trench. Excess slurry may flow back into the trench. Mixing areas may be located only within approved work limits. All mixing areas shall be cleaned up and restored upon completion of the work in accordance with Paragraph 3.4.13, Cleanup.

3.4.10 Soil-Bentonite Backfill Placing

Initial soil-bentonite backfill placement shall be by one of the following methods: 1) Placement by lowering soil-bentonite backfill to the bottom of the trench with crane and clamshell bucket, or tremie until the surface of the soil-bentonite backfill rises above the surface of the slurry trench at the end of the trench; or 2) Construct a lead-in trench at a point outside of the limits of work to allow a soil-bentonite backfill face to form prior to reaching the full depth of the required slurry trench. No payments will be made for the portions of trenches which lie outside of the limits of work. Soil-bentonite backfilling operations shall proceed in such a manner that the slope of the initially placed soil-bentonite backfill is maintained. Free dropping of soil-bentonite backfill material through the slurry is not permitted. The soil-bentonite backfill shall be placed so that it will slide down the forward face of the soil-bentonite backfill slope. The soil-bentonite backfill material shall be placed in the excavated trench so that no pockets of slurry are trapped and that a constant slope is maintained. Placement shall be continuous from the beginning of the trench in the direction of the excavation to the end of the trench.

3.4.11 Mixing and Placing During Cold Weather

No mixing or placing of the soil-bentonite backfill shall be performed when the air temperature is below 20 degrees Fahrenheit unless demonstrated by the test section that the performance of the completed soil-bentonite slurry trench cutoff wall will be unaffected by construction at the low temperature range proposed for construction. Frozen soil-bentonite backfill shall not be placed in the trench and backfill material containing frozen lumps shall not be used to mix soil-bentonite backfill. Wall damage due to frost and frozen conditions shall be removed and replaced or repaired at no additional cost to the Government.

3.4.12 Soil-bentonite Slurry Trench Cutoff Wall Cap

To prevent desiccation and cracking of the soil-bentonite slurry trench cutoff wall material during set-up or hardening of the backfill, the Contractor shall place a cohesive soil cap on top of the soil-bentonite slurry trench cutoff wall. Cohesive materials include materials classified as CL-ML, CL, and CH. Testing required for classifying materials shall be in accordance with ASTM D 4318 and ASTM D 422. If the Contractor elects to use off-site borrow material as a source of cap material, then the borrow shall be from a commercial quarry and shall be approved by the Contracting Officer. In addition to the above requirements, the soil-bentonite slurry trench cutoff wall cap material shall be free of rocks of any dimension greater than eight (8) inches. To prevent desiccation of the soil-bentonite slurry trench cutoff wall, the cap shall be placed as soon as the soil-bentonite slurry trench cutoff wall has hardened sufficiently to support the weight of the fill. Moisture content of the material when placed shall be wet of the optimum value determined in accordance with ASTM D 698. The cap shall be a minimum of one (1) foot thick and six (6) feet wide and include a woven geotextile fabric as shown on the Drawings. The fill shall be placed in maximum eight (8) inch lifts, loose measure, or as otherwise approved by the Contracting Officer. Each lift shall be compacted to a minimum of 85% of the maximum Standard Proctor dry density (ASTM D 698). The slurry wall cap will not be paid for separately but shall be considered incidental to the soil-bentonite slurry trench cutoff wall construction. The Contractor shall place and compact additional soil-bentonite slurry trench cutoff wall cap during the duration of the contract to fill any depressions that may occur due to settlement of the soil-bentonite slurry trench cutoff wall.

Heavy construction equipment and machinery shall only be driven over the soil-bentonite slurry trench cutoff wall at approved heavy equipment crossing points as designated in the Implementation Plan. These crossing points shall provide suitable roadway support without damaging the soil-bentonite slurry trench cutoff wall. The design and choice of materials for the cap at the crossing points are the responsibility of the Contractor and shall be included in the Implementation Plan.

3.4.13 Cleanup

Removal of all excess excavation spoil, unused backfill, and slurry shall be accomplished following the completion of final backfilling and trench site compacting and grading.

3.4.14 On-Site Disposal

Materials that may be disposed of on-site, at the designated stockpile area shown on the Drawings include excess bentonite slurry; excess slurry trench backfill mix; decommissioned well material; soil samples; and excess trench excavated materials. The Contractor shall provide procedures for the transport and disposal of excess waste materials in the stockpile.

3.4.15 Off-Site Disposal

All materials that have not been approved to be disposed of on-site shall be legally disposed off-site. Materials to be disposed of off-site include unopened containers of excess raw materials (e.g., powdered bentonite, grouting additives). The Contractor is solely responsible for the location of off-site disposal areas, the transport of waste to the disposal areas, and all costs associated with disposal.

3.5 TESTS

The Contractor shall be responsible for project Quality Control records. Observations, measurements, and tests shall be performed for quality control. All quality control records, routine testing procedures, observations, and measurements shall be available for inspection at any time. The Contracting Officer will be performing Quality Assurance testing and observation during construction. The Contractor shall cooperate fully with the designated Quality Assurance personnel. Quality Control Testing shall be performed in accordance with the Contractor Quality Control (CQC) Plan discussed in SECTION 01451 CONTRACTOR QUALITY CONTROL and with the Implementation Plan approved by the Contracting Officer, and shall include components listed below.

Each work day, the Contractor shall perform testing on mix components and mix properties in accordance with the Implementation Plan and Paragraph 2.4, Quality Control Testing, which shall provide testing requirements and frequencies. The minimum requirements presented are to be used as a guideline for the Contractor to develop his own Contractor Quality Control (CQC) program which shall be submitted as part of the Implementation Plan. Areas that fail according to the standards established by the approved CQC Plan shall be repaired, or removed and replaced to the location of the nearest passing test or as otherwise approved by the Contracting Officer. Test

results shall be provided to the Contracting Officer within 24 hours of test completion.

3.5.1 Measurements and Surveys

Excavation and soil-bentonite backfill soundings shall be taken along the alignment of the soil-bentonite slurry trench cutoff wall at minimum 10-foot intervals, and at the beginning and the end of each day using a weighted tape, cable, or other approved device. Soundings shall be measured to the nearest 0.1 ft. The soundings shall measure the following:

3.5.1.1 Elevation of Top of Key Stratum

The top of the key stratum shall be determined based on examination of bucket cuttings during trench excavation. This elevation shall be subject to approval.

3.5.1.2 Elevation of Bottom of Excavation

The elevation of the bottom of the excavation shall be determined. The elevation of the bottom of excavation shall be subject to approval.

3.5.1.3 Elevation of Bottom Prior to Backfilling

This sounding shall be used to monitor for sidewall collapse and for any accumulated sediments which may be present at the trench bottom immediately prior to backfilling. This sounding shall not precede the toe of the soil-bentonite backfill slope more than fifty (50) feet.

3.5.1.4 Profile of Backfill Slope and Trench Bottom

The soil-bentonite backfill slope and trench bottom shall be sounded at the beginning and end of each day, and at additional times as directed by the Contracting Officer.

3.5.1.5 Other Measurements and Surveys

The Contractor shall make daily measurements and soundings to record the following at each measured location. The location of construction joints, runouts, direction changes and other trench features shall be surveyed and measured. Measurements and soundings (measured with an accuracy of 0.1 ft.) shall be taken along the alignment of the slurry trench at minimum 10-foot

intervals, and at the beginning and the end of each day to record:

a. Elevation of top of existing ground surface prior to any grading activities and prior to any necessary work platform construction.
b. Elevation of top of trench/work platform.
c. Elevation of top of soil-bentonite slurry trench cutoff wall.
d. Elevation of top of soil-bentonite slurry trench cutoff wall cap.
e. Horizontal location.
f. Width of trench.
g. Width of work platform.

3.5.2 Project Records

The Contractor shall maintain all Records for testing, measurements, and inspections performed to ascertain that the soil-bentonite slurry trench cutoff wall construction meets the specifications. Required reports, records, and documentation shall be furnished to the Government within twenty-four (24) hours of the test or observation. The Contractor's required records are outlined below.

3.5.2.1 Test Results

The results of all construction control testing required in these specifications, including water tests, slurry tests, backfill tests, and depth soundings shall be furnished by the Contractor. The Contractor shall furnish records of all observations, measurements, and tests performed, identified with the location and time of testing. These records shall be furnished no later than twenty-four (24) hours after the tests, measurements, and/or observations were made. In addition, the results of all tests taken, both passing and failing tests, shall be recorded in the CQC report as discussed in SECTION 01451 CONTRACTOR QUALITY CONTROL.

3.5.2.2 Construction Log

The Contractor shall maintain a construction log of daily activities that shall include equipment calibration, arrival and departure of equipment and manpower, delays encountered during construction, causes of delays, locations of affected areas, and extent of delays. The log shall also record unusual conditions or problems encountered, and the dispositions made. The location in the soil-bentonite slurry trench cutoff wall of each day's production of backfill shall be recorded. Contractor

shall document any observations on caving, squeezing, or other ground movement, document the location and elevation of any unusual changes in slurry elevation, measure and record the top of slurry and backfill at time of placement and set up, and observe the trench and hardening backfill for evidence of variability, cracking, excessive drying, contamination, bleeding, subsidence or other unusual conditions. Any unusual observations shall be reported to the Contractor Officer within twenty-four (24) hours.

3.6 AS-BUILT PROFILE AND DRAWING

An as-built profile and drawing of the trench bottom and soil-bentonite backfill slopes, including descriptions of materials encountered in the trench bottom, shall be continuously maintained. This profile shall indicate extent of excavation and the soil-bentonite backfill profile at the end of each work day as well as the results of all soundings and measurements required by Paragraph 3.5.1, Measurements and Surveys. The soil-bentonite backfill material shall appear on the profile with the limits of each day’s production of material delineated as placed; for clarity purposes this information may need to be a separate profile. The profile(s) shall have a horizontal scale of 1 inch = 100 feet and a vertical scale of 1 inch = 5 feet. The drawing shall be full size (i.e., 28 x 40 inches). The as-built drawings shall be prepared in accordance with SECTION 01780 CLOSEOUT SUBMITTALS. The drawing shall also include the information as gathered per Paragraph 3.5.2.1, Test Results. Surveyors' notes, records, and calculations shall be furnished as backup information. The drawings shall be provided to the Contracting Officer upon completion of the soil-bentonite slurry trench cutoff wall.

Table 1. Test Solutions to be Used for Compatibility Testing		
No. 1- Groundwater from site monitoring well MW-32	No. 2- Free Phase Hydrocarbon Layer from MW-32	No. 3- The sample of groundwater that has the highest pH from monitoring wells: MW-1, MW-2, MW-3, MW-5, MW-6, MW-7, MW-26, MW-29, MW-30, MW-33, CE-101, CE-104, CE-106

Table 2. Required Chemical Analysis of Test Solutions	
Parameter	Test Method
Volatiles (including BTEX, methylene chloride, acetone)	EPA 8260B
Semi-volatiles	EPA 8270C
Phenolics (including phenol)	EPA 420.2
Total Petroleum Fuel Hydrocarbons (gasoline & diesel range)	EPA 8015M
Total Calcium	EPA 6010B
Total Magnesium	EPA 6010B
Total Dissolved Solids	EPA 160.3
Hardness	API RP 13B-1
pH	API RP 13B-1

TABLE 3

SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL QUALITY CONTROL TESTING

Property	Requirement (See Note 1)	Test Method
Bentonite Powder:		
a. YP/PV Ratio	1.5 maximum	API Spec 13A
b. Plastic Viscosity	> 10	API Spec 13A
c. Filtrate Loss	< 12.5 cubic cm	API Spec 13A
d. Moisture Content	< 10%	ASTM D 2216
Chemical Analysis of Water:		
a. pH	Per Implementation Plan (6 to 8)	API RP 13B-1
b. Hardness	Per Implementation Plan (< 100 ppm)	API RP 13B-1
c. Dissolved Solids	Per Implementation Plan (< 500 ppm)	Para 2.4.2
Initial Bentonite Slurry:		
a. Viscosity	Per Implementation Plan (> 40 sec)	API RP 13B-1
b. Density	> 64 pcf	API RP 13B-1
c. Filtrate Loss	Per Implementation Plan (< 20 cm^3)	API RP 13B-1
d. pH	Per Implementation Plan (6.5 to 10)	API RP 13B-1
In-Trench Bentonite Slurry:		
a. Density	Per Implementation Plan (64 to 85 pcf) but at least 15 pcf less than the soil-bentonite backfill density	API RP 13B-1
b. Viscosity	Per Implementation Plan (40 to 90 sec)	API RP 13B-1
c. Sand Content	Per Implementation Plan (20% max)	API RP 13B-1
d. pH	Per Implementation Plan (6.5 to 10)	API RP 13B-1
e. Filtrate Loss	Per Implementation Plan (< 25 cm^3)	API RP 13B-1
Backfill Material:		
a. Grain Size	Per Paragraph 2.1.3	ASTM D 422
b. Atterberg limits	Per Implementation Plan	ASTM D 4318
c. Moisture content	For record	ASTM D 2216
Soil-Bentonite (S-B) Backfill Material:		
a. Grain Size	Per Implementation Plan	ASTM D 422
b. Atterberg limits	Per Implementation Plan	ASTM D 4318
c. Slump Cone	Per Implementation Plan	ASTM C 143
d. Density	For Record	ASTM D 698
e. Bentonite Content	> 4%, See Note 2	
f. Permeability	See Notes 3, 4, and 5	API RP 13B-1 & ASTM D 5084

NOTES:

1) The values provided in parentheses are the Corps of Engineers recommended criteria. The Contractor shall provide detailed explanations, including test results, of any departure from the Corps of Engineers recommended criteria.

2) The minimum bentonite content shall be four percent (4%) by dry weight of the soil-bentonite backfill.

3) For the production cutoff wall, one permeability test shall be performed on every 25 lineal feet of wall using the API fixed-ring device for the filter press (API RP 13B-1) modified in accordance with Appendix A of EPA/600/2-87/065. For every 100 lineal feet of wall, there shall be one test on a duplicate sample using a flexible wall permeameter (ASTM D 5084). The required test frequencies for the test section wall are provided in Paragraph 2.4.5. Test methods and procedures shall be submitted and approved prior to use. The permeability tests shall use the water to be used for mixing during construction as permeate.

4) Flexible wall permeability tests shall be performed at an effective confining pressure of 0.5 tsf. For the flexible wall test, the hydraulic gradient should not exceed the maximum value recommended in the ASTM D 5084.

5) The permeability determined at the conclusion of the flexible wall test on the samples obtained from the test section and production walls shall be no more than 1.0×10^{-7} cm/sec. Area(s) of the test section or production walls that fail to meet the permeability requirement shall be removed to the location of the nearest passing test and replaced. It is noted that acceptable portions of the wall may need to be removed in order to remove the portion of soil-bentonite backfill that had failed. All necessary repairs to the wall shall be made at no cost to the Government.

Table 4 – Summary of Observations Wells to be Monitored Daily and Other Required Well Data to be Obtained by the Contractor

Measurement Date:											
Well Number	**Ground Surface El (MSL)** See Note 1	**Top of Casing/ Riser El (MSL)** See Note 1	**Depth to Product (ft)** See Note 2	**Depth to Water (ft)** See Note 2	**Product Thick-ness (ft)**	**Fluid El (MSL)**	**Un-Corrected Ground Water El (MSL)** See Note 3	**Corrected Ground Water El (MSL)** See Note 3	**Baro-metric Pres-sure (mbar)** See Note 5	**N**	**E**
										See Note 1	
MW-1*											
MW-5											
MW-6*											
MW-7											
MW-11*											
MW-25*											
MW-26*											
MW-28											
MW-30											
MW-32											
MW-33											
CE-101											
CE-103											
CE-104											
CE-106											
CE-109											
CE-110											
CE-111											
CE-112											
CE-113											
CE-114											
CE-115											
See Note 4											

Notes:
1. Ground surface elevation, top of casing/riser elevation (El), and northing (N) and easting (E) shall be determined by the Contractor. MSL refers to mean sea level.
2. Depth to free product and water level shall be determined using an electronic oil/water interface probe.
3. Water elevation shall be corrected for the presence of product using an average specific gravity of 0.85 for the product.
4. The wells installed for the test section shall also be read daily throughout the contract.
5. Barometric pressure shall be recorded at the same time the water level in each well is obtained.

END OF SECTION

SECTION 02722

CRUSHED SLAG AGGREGATE FILL MATERIAL

1 GENERAL

1.1 SCOPE

The work of this section consists of furnishing and placing crushed slag aggregate material to fill several tar-filled site surface depressions as indicated on the drawings and as directed by the Contracting Officer.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 29/C 29M	(1997) Bulk Density and Voids in Aggregates
ASTM C 117	(1995) Materials Finer Than No. 200 Sieve in Mineral Aggregates by Washing
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 75	(1987; R 1997) Sampling Aggregates
ASTM E 11	(1995) Wire-Cloth Sieves for Testing Purposes

State of Illinois Specifications

IDOT Standard Spec.	(1998) Illinois Department of Transportation Standard Specifications and Supplemental Specifications

1.3 DEFINITIONS

For the purposes of this specification, the following definitions apply.

1.3.1 Crushed Slag Fill Material

Crushed slag aggregate fill material is the graded product resulting from the processing of air cooled blast furnace slag. The slag shall meet the requirements of IDOT coarse aggregate modified CMM-18 designation, as listed in IDOT Standard Specification Article 1004.01.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Waybills and Delivery Tickets; G

Copies of waybills and delivery tickets during the progress of the work. Before payment is authorized, the Contractor shall file certified waybills (tonnage) and certified delivery tickets for all slag furnished and placed.

SD-06 Test Reports

Testing; G

Copies of test results within 24 hours after the tests are performed. Certified copies of test results shall be submitted for approval not less than 14 days before the material is placed.

1.5 SAMPLING AND TESTING

Sampling and testing shall be the responsibility of the Contractor. Sampling and testing shall be performed by a testing laboratory approved in accordance with Section 01451 CONTRACTOR QUALITY CONTROL. Work requiring testing will not be

permitted until the testing laboratory has been inspected and approved. The materials shall be tested to establish compliance with the specified requirements; testing shall be performed at the specified frequency. The COR may specify the time and location of the tests. Copies of test results shall be furnished to the COR within 24 hours of completion of the tests.

1.5.1 Sampling

Samples for laboratory testing shall be taken in conformance with ASTM D 75. When deemed necessary, the sampling will be observed by the COR.

1.5.2 Tests

The following tests shall be performed in conformance with the applicable standards listed.

1.5.2.1 Sieve Analysis

Sieve analysis shall be made in conformance with ASTM C 117 and ASTM C 136. Sieves shall conform to ASTM E 11.

1.5.2.2 Density and Quality of Slag

Density per cubic foot of slag shall be determined in accordance with ASTM C 29/C 29M on the CMM-18 slag material. The slag shall meet the requirements of IDOT Class C coarse aggregate quality for the deleterious materials tests as listed in IDOT Standard Specification Section 704.

1.5.3 Testing Frequency

1.5.3.1 Tests

One of each of the following tests shall be performed on the proposed slag material a minimum of 14 days prior to commencing to demonstrate that the proposed material meets all specified requirements when furnished. If materials from more than one source are going to be utilized, this testing shall be completed for each source.

a. Sieve Analysis

b. Density per cubic foot of slag

c. Deleterious materials content

1.5.4 Approval of Material

The testing of the material shall be completed a minimum of 14 days prior to the time the material will be required in the work. Approval of material will be made by the COR and will based on test results.

1.6 PLANT, EQUIPMENT, AND TOOLS

All plant, equipment, and tools used in the performance of the work will be subject to approval before the work is started and shall be maintained in satisfactory working condition at all times. The equipment shall be adequate and shall have the capability of meeting grade and thickness control requirements as set forth herein.

2 PRODUCTS

2.1 CRUSHED SLAG

The IDOT CMM-18 shall consist of clean, sound, durable particles of crushed slag. The IDOT CMM-18 shall be free of lumps of clay, organic matter, and other objectionable materials. The crushed slag shall be angular particles of uniform density. When the crushed slag is supplied from more than one source, slag from each source shall meet the specified requirements. Crushed slag shall be an air-cooled blast-furnace product having an air dry unit weight of not less than 65 pcf as determined by ASTM C 29/C 29M, and shall meet all the requirements specified below.

2.1.1 Gradation Requirements and Maximum Deleterious Materials Content

The specified gradation requirements for the IDOT CMM-18 shall be as listed in IDOT Standard Specification Article 1004.01. Sieves shall conform to ASTM E 11. The deleterious materials content of the slag shall not exceed the maximum percentages allowed for Class C coarse aggregate as listed in IDOT Standard Specification 704.

3 EXECUTION

3.1 GENERAL REQUIREMENTS

When the slag is constructed in more than one layer, the previously constructed layer shall be cleaned of loose and foreign matter by sweeping. Adequate drainage shall be provided during the entire period of construction to prevent water from collecting or standing on the working area. Line and grade stakes shall be provided as necessary for control. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitably spaced for string lining.

3.1.1 Timing of Execution

The slag shall be placed on the tar within 30 days of completing the Before Construction Background air monitoring task specified in SECTION 01410, ENVIRONMENTAL PROTECTION, paragraph 3.1.8.3.a.

3.2 SLAG SOURCE(S)

Slag shall be obtained from an offsite source(s).

3.3 STOCKPILING MATERIAL

If material will be stockpiled on the site, the locations of the stockpiles must be approved by the COR. Prior to stockpiling of material, storage sites shall be cleared and leveled by the Contractor. Materials obtained from different sources shall be stockpiled separately.

3.4 INSTALLATION

3.4.1 Placing and Grade Control

The slag shall be placed on the tar-filled site depressions. The finished and completed slag fill surface shall conform to the cross section shown on the drawings and as directed by the COR. The slag fill shall completely cover the site surface depressions indicated on the drawings and other areas as directed by the COR. The Contractor is advised that vehicles or heavy equipment will not be permitted to drive across these tar-filled areas until the slag fill material is in place.

3.4.2 Thickness

Thickness of the slag fill shall be as indicated on the drawings and as directed by the COR.

3.4.3 Finishing

The surface of the slag layer shall be sloped to drain as indicated on the drawings and as directed by the COR.

3.5 MAINTENANCE

Heavy equipment shall not be permitted on the completed areas except when necessary to construction, and then the area shall be protected against marring or damage to the completed work. Any area of slag fill that is damaged shall be reworked or replaced as necessary to comply with this specification and at no charge to the Government. No additional payments will be made for materials that must be replaced.

END OF SECTION

SECTION 11500

OIL/WATER SEPARATOR PROCESS EQUIPMENT

PART 1 GENERAL

1.1 SCOPE

The Oil/Water Separator Process Equipment shall consist of the oil/water separator unit and all other equipment, instrumentation, and material components of the oil/water separator system. The oil/water separator system shall include the oil/water separator unit, unit housing, solids management in the separator, maintenance drainage system, and all other pertinent equipment required to complete the work.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN PETROLEUM INSTITUTE

API Publ. 421 Design and Operation of Oil-Water Separators

DEPARTMENT OF THE ARMY

ETL 1110-3-466 Selection and Design of Oil/Water Separators at Army Facilities

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-25 (1998) Standard Marking System for Valves, Fittings, Flanges and Unions

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1991) National Electrical Code

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Materials and Equipment; GA.

The Contractor shall provide the manufacturer's descriptive and technical literature for the separator system, including design recommendations; pressure and temperature ratings; dimensions, type, grade and strength of the pipe and fittings; thermal characteristics (coefficient of expansion and thermal conductivity); and chemical resistance to each chemical and chemical mixture in the liquid stream. As appropriate, the submittal shall include operating parameters (intermittent and continuous flow); flow conditions (minimum, average, and maximum flow rate, and total separator storage); influent characteristics (temperature, specific gravity, viscosity, and pH); contaminants (settleable solids, other contaminants affecting operation, and volatiles); product-oil (specific gravity and percentage oil to water); separator capacity, including volume provided for separated oil, settleable solids, and flow-through detention time necessary for adequate separation; accessories, including oil pumps, sludge pumps, water pumps, and level controls; and performance analysis. Surface areas must be provided. If an oil coalescing interceptor is utilized, ensure that an adequate number of plates are provided to obtain the minimum required total surface area; if vertical tubes are utilized, ensure that the minimum area of vertical tubes are provided.

Instrumentation and Control System; GA.

The Contractor shall provide the manufacturer's descriptive and technical literature, performance charts, and installation instructions. Product specific catalog cuts shall be in booklet form, indexed to the unique identifiers, and shall consist of data sheets that document compliance with the specification. Where multiple components are shown on a catalog cut, the application specific component shall be marked.

Data Collection Weekly Report; FIO.

Performance Verification Test; GA.

The test procedures for the Performance Verification Test (PVT) shall be submitted for approval prior to the test. The Contractor must submit the PVT procedures for approval at least 30 days prior to the performance of the PVT. After receiving

approval for the PVT procedures, the Contractor will provide at least 7 days notice to the Government before the test is performed. After the test is completed, the Contractor must submit all test records and data for Government approval, as described in Paragraph 3.2.3, Performance Verification Test (PVT).

SD-04 Drawings

Instrumentation and Control Systems; GA.

The Contractor shall provide detailed drawings containing complete piping, wiring, schematic, flow diagrams, and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Drawings shall include, as appropriate, product specific catalog cuts; a drawing index; a list of symbols; and a series of drawings for each control system using abbreviations, symbols, and nomenclature and identifiers as shown.

SD-06 Instructions

Installation; FIO.

The manufacturer's installation recommendations or instructions for each material or procedure to be utilized, including materials preparation, shall be provided.

Instruction Manual; FIO.

SD-19 Operation and Maintenance Manuals

Oil/Water Separator; GA.

Sufficient copies of operation and maintenance manuals, as required in SECTION 01330 SUBMITTAL PROCEDURES, shall be in indexed booklet form. Operation manuals shall detail the step-by-step procedures required for the specialized start-up, operation, and shutdown of the oil/water separator system, and shall include the manufacturer's name, model number, parts list, and brief description of piping equipment, such as valves and other appurtenances, and their basic operating features. Maintenance manuals shall list routine maintenance procedures and troubleshooting guides for the equipment, and shall include equipment layout and valve locations to prevent oil spills due to overfilling and other causes.

1.4 SYSTEM DESCRIPTION

1.4.1 Design Requirements

The Contractor shall furnish and install an oil/water separator with an integral oil storage compartment and solids collection chamber. The separator shall comply with the requirements of this specification and shall be approved by the Contracting Officer. The separator shall be comprised of a tank with an inlet compartment (to settle out solids), an oil separation compartment, an integral oil storage compartment or area, a solids collection chamber, and an outlet compartment. *** Minimum residence time of the oil/water separator shall be thirty (30) minutes.*** The integral oil storage compartment will allow for holding the oil removed by the unit until there is enough to pump to the storage tanks. The solids collection chamber will be designed to allow periodic removal of the solids. The oil/water separator shall be designed in accordance with design principles commonly accepted for sedimentation or clarification chambers at wastewater treatment plants and applicable sections of the American Petroleum Institute, API Publication 421 and ETL 1110-3-466, Selection and Design of Oil/Water Separators at Army Facilities.

The Contractor shall be responsible for designing, constructing, operating, and maintaining the oil/water separator. As part of the dewatering process system, the oil/water separator shall be used to process the liquid (groundwater and free product) from the inspection trench, obstruction removal operations, test section pump test, and similar activities. Several intermittent wastewater streams may also be processed in the system. These include contents of underground storage tanks (USTs), petroleum piping abandonments, and water resulting from cleaning these types of materials and equipment; and the water used for the Performance Verification Test (PVT) performed on the oil/water separator. The Contractor must have approval from the Contracting Officer before processing the intermittent streams. Decontamination fluids shall not be processed through the dewatering process system. The oil/water separator must be operational prior to the start of earth disturbing activities. Refer to SECTION 00200 INFORMATION AVAILABLE TO BIDDERS and SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS for additional information.

1.4.1.1 Piping Systems

Piping systems for the separator unit shall be suitable for design conditions, considering the piping both with and without internal pressure, and installation factors such as insulation, support spans, and ambient temperatures. Consideration shall be given to all operating and service conditions both internal and external to the piping systems.

1.5 QUALITY ASSURANCE

1.5.1 Standard Products

Material and equipment shall be the standard products of a manufacturer regularly engaged in the manufacturing of the products and shall essentially duplicate items that have been in satisfactory use for at least two (2) years prior to bid opening. Nominal sizes for standardized products shall be used. Pipe, valves, fittings, and appurtenances shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the site.

1.5.2 Identification

Each piece of pipe shall bear the ASTM designation and all other markings required for that designation. Valves shall bear a securely attached tag with the manufacturer's name, valve model number, and valve identification permanently displayed and marked in accordance with MSS SP-25.

1.6 SEQUENCING AND SCHEDULING

The oil/water separator, as part the dewatering process system, will need to be on-line before the Contractor begins the cutoff wall test section and dewatering of the inspection trench.

1.7 MAINTENANCE

The separator units shall be provided with generous access openings to allow maintenance, including cleaning and removal of parallel and coalescing plates; sampling and testing of waste effluent; period visual inspection; measurement of depth of settled solids and oil floating on the surface; and periodic removal of accumulated solids and recoverable oil products. The design of the separator system, if enclosed, shall include access hatches for the installation, removal, and replacement of equipment. Eye bolts or trolley beams shall be provided for

hoisting or removing equipment from mountings. A drainage system shall be provided for collection of washdown, seepage, and leakage.

1.7.1 Service

Services for a prefabricated oil/water separator system shall be provided by a manufacturer's representative who is experienced in the installation, adjustment and operation of the equipment specified. The representative shall inspect the installation, and supervise the adjustment and testing of the equipment.

1.7.2 Extra Materials

Concurrent with delivery and installation of the specified oil/water separator equipment, spare parts shall be furnished for each different item of material and equipment specified that is recommended by the manufacturer to be replaced any time up to one (1) year of service.

PART 2 PRODUCTS

2.1 SYSTEM PERFORMANCE

2.1.1 Requirements

The effluent from the oil/water separator, or the treated water, shall be reinfiltrated back into the shallow aquifer. BP Amoco/ARCO has operated an oil recovery system at the south end of the property since 1993. As referenced in SECTION 00200 INFORMATION AVAILABLE TO BIDDERS, progress reports submitted by Arcadis Geraghty & Miller provide the volume of oil recovered by this system; these reports are available for review.

2.1.2 Performance Guarantees

The Contractor shall be required to replace installed equipment not performing to the level required by these specifications at no additional cost to the Government.

2.1.3 Criteria

There are multiple choices in the selection of oil/water separators, including commercially available, pre-fabricated units, and cast-in-place concrete separators. The design of the system shall incorporate local conditions, performance

requirements, project characteristics, and usability of the system.

*** The oil/water separator shall be designed for a minimum residence time of thirty (30) minutes.*** The Contractor shall not rely solely on manufacturer claims concerning the efficiency and capacity of their equipment. The Contractor shall analyze systems based on physical size and capacity of the system to produce a suitable effluent and oil recovery based on the flowrate, water temperature, specific gravities of oil and water, viscosity of fluid, and the minimum oil particle size to be removed.

2.1.4 Tests

Performance testing shall be required after the unit is installed to satisfy performance requirements.

2.2 COMPONENTS

2.2.1 General Requirements

The separator and all system components shall be compatible with the free product and wastes to be handled. The components include but are not limited to a separation chamber, water sump, product sump, and oil storage tank. *** The separator and all system components shall be designed such that the reinfiltration system (which shall be designed and installed by the Contractor) does not clog and limit the ability of the water effluent to reinfiltrate back into the shallow aquifer.***

The Contractor shall take appropriate measures to winterize the oil/water separator if it is to be used during the winter months. Equipment and wiring must be in accordance with NFPA 70, with proper consideration given to environmental conditions such as moisture, dirt, corrosive agents, and hazardous area classification.

The oil/water separator shall accommodate uncontrolled surges of water, oil, or oil/water mixtures ranging from zero flow up to one hundred per cent of maximum hydraulic throughput capacity.

The oil/water separator and oil storage tank shall have provisions to prevent oil spills due to overfilling and other causes, such as a high level alarm in the oil storage tank or an oil/water separator that automatically shuts down the de-watering pumps.

2.2.2 Nameplates

Each major component of equipment shall have the manufacturer's name and address, and the model and serial number in a conspicuous place. Laminated plastic nameplates shall be provided for equipment devices and panels furnished. Nameplates for devices smaller than 1 by 3 inches shall be attached by a nonferrous metal chain. All other nameplates shall be attached to the device.

2.2.3 Materials and Equipment

Materials and equipment shall be standard unmodified products of a manufacturer regularly engaged in the manufacturing of such products. Units of the same type of equipment shall be products of a single manufacturer. Items of the same type and purpose shall be identical and supplied by the same manufacturer, unless replaced by a new version approved by the Government.

2.2.3.1 Reinforced Concrete Tanks

Reinforced concrete tanks shall be either cast-in-place or constructed of prefabricated concrete units. Reinforced concrete tanks shall be open to the atmosphere with grated covers, and railing around the tank perimeter. Railing shall have removable sections for maintenance purposes.

2.2.3.2 Steel and Fiberglass Reinforced Plastic Tanks

Open steel and fiberglass reinforced plastic tanks shall be provided with grate covers and railing around the perimeter of the tank. All railing shall have a removable section for maintenance purposes. Underground oil/water separators are not recommended due to inherent problems related to access for sampling and inspections.

2.2.3.3 Pumps

When lifting oily wastewater into the separator unit, one or more pumps shall be required. The pump station shall be constructed with adequate space, piping, and equipment, along with storage volume for settled solids. Factory assembled or package type systems shall be anchored to base slabs where warranted by subsurface conditions. One of the following types of pumps shall be used so that physical emulsification of oils does not occur during pumping: pneumatic ejectors, screw pumps,

plunger pumps, and progressive cavity pumps. Flow meters shall be installed to indicate and record the discharge from the pump station.

2.3 FACTORY TEST

If the separator system is obtained from a manufacturer, the control system shall be tested at the factory prior to shipment. Written notification of planned testing shall be given to the Government at least twenty-one (21) days prior to testing, and in no case shall notice be given until after the Contractor has received written Government approval of the test procedures.

PART 3 EXECUTION

3.1 EQUIPMENT INSTALLATION

3.1.1 Installation

The Contractor shall install system components in accordance with the manufacturer's instructions and shall provide necessary interconnections, services, and adjustments required for a complete and operable system. Instrumentation and communication equipment and cable grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation. The Contractor shall adjust or replace devices not conforming to the required accuracies. Factory sealed devices shall be replaced (rather than adjusted).

3.1.2 Sequences of Operation

The Contractor shall study the operation and sequence of local equipment controls, as a part of the conditions report, and note any deviations from the described sequences of operation on the contract drawings. The Contractor shall make necessary adjustments to make the equipment operate in an optimum manner and shall fully document changes made.

3.2 FIELD TESTS AND QUALITY CONTROL

The Contractor shall provide personnel, equipment, instrumentation, and supplies necessary to perform site testing. The Government will witness the Performance Verification Test (PVT), and written permission shall be obtained from the Government before proceeding with the testing. Original copies of data produced, including results of each test procedure, during the PVT shall be turned over to the Government at the

conclusion of each phase of testing prior to Government approval of the test. The test procedures shall cover actual equipment and functions specified for the project. After successful completion of the factory test as specified, the Contractor will be authorized to proceed with the installation of the system equipment, hardware, and software.

3.2.1 Pipe Leakage Tests

Unless approved by the Contracting Officer, leakage testing shall be conducted after the pressure tests have been satisfactorily completed. The duration of each leakage test shall be at least 2 hours, and during the test the piping shall be subjected to not less than 200 psig pressure. Leakage is defined as the quantity of the test liquid, oily water, that is supplied to the piping system, or any valved or approved section thereof, to maintain pressure within 5 psi of the specified leakage test pressure after the piping has been filled with the test liquid and all air is expelled.

Should any test disclose leakage greater than that allowed, the leaks shall be located and repaired until the leakage is within the specified allowance, without additional cost to the Government.

3.2.2 Valve Testing

Valves may either be tested while testing pipelines, or as a separate step. It shall be demonstrated that valves open and close smoothly with operating pressure on one side and atmospheric pressure on the other, and in both directions for two-way valve applications.

3.2.3 Performance Verification Test (PVT)

The Contractor shall prepare test procedures for the PVT. The test procedure shall describe all tests to be performed and other pertinent information, such as specialized test equipment required and the length of the PVT. The test procedures shall explain in detail the step-by-step actions and the expected results to demonstrate compliance with all the requirements of the drawings and this specification. The test procedure shall be site specific and be based on the inputs and outputs, required calculated points, and sequence of control. The Contractor shall demonstrate that the completed control system complies with the contract requirements. All physical and functional requirements of the project, including communication

requirements, shall be demonstrated and shown. The Contractor shall demonstrate that each system operates as required in the sequence of operation. The PVT as specified shall not be started until after receipt by the Contractor of written permission by the Government, based on the Contractor's written report, including certification of successful completion of testing, adjusting and commissioning as specified, and upon successful completion of training as specified. Upon successful completion of the PVT, the Contractor shall deliver test reports and other documentation as specified to the Government.

3.2.4 Disposal of Solids from Sedimentation Chamber

Solids shall be placed with the contaminated material stockpiled on-site. Refer to SECTION 01356 STORM WATER POLLUTION PREVENTION MEASURES and SECTION 02215 SURVEY INVESTIGATION, INSPECTION, AND OBSTRUCTION REMOVAL for the procedures and maintenance of the stockpile.

3.3 MANUFACTURER'S FIELD SERVICES

The Contractor shall obtain the services of a manufacturer's representative experienced in the installation, adjustment, and operation of the equipment specified. The representative shall supervise the installing, adjusting, and testing of the equipment.

3.4 FIELD TRAINING

Field training oriented to the specific system shall be provided for designated personnel. The Contractor shall be knowledgeable in general system architecture and the functional operation of the system. The Contractor shall be able to start the system, operate the system, recover the system after a failure, and describe the specific hardware architecture and operation of the system; be fully proficient in all system operations; and have the capability to perform troubleshooting, diagnostic procedures, and repairs.

3.5 OPERATION AND MAINTENANCE

The Contractor shall be responsible for the operation and maintenance of the oil/water separator. Operation and maintenance procedures shall be included in the Dewatering System Operation Manual discussed in SECTION 02150 DEWATERING PROCESS AND OIL BOOM SYSTEMS.

3.6 DECONTAMINATION AND REMOVAL

The Contractor shall disassemble, decontaminate, and remove the oil/water separator from the site at the end of the project. The Contractor shall dispose of all contaminated and non-contaminated materials, wastes, and expendables related to the oil/water separator and its operation. All items shall be disposed of off-site according to SECTION 02120 STORAGE, TRANSPORTATION, AND DISPOSAL OF HAZARDOUS MATERIALS AND FREE PRODUCT WASTE.

3.7 SAFETY GUIDELINES

Personnel shall abide by the safety guidelines specified in SECTION 01351, SAFETY, HEALTH AND EMERGENCY RESPONSE (HTW/UST).

END OF SECTION

U.S. ARMY CORPS OF ENGINEERS

INDIANA HARBOR & CANAL
CONFINED DISPOSAL FACILITY
SUBSURFACE INVESTIGATION AND CUTOFF WALL
PRE-BID CONFERENCE

TRANSCRIPT OF PRE-BID CONFERENCE reported by Drea Sasse, CSR, RPR, and Notary Public within and for the County of Porter, State of Indiana, at Calumet College of St. Joseph, Room 300, 2400 York Avenue, Whiting, Indiana, on the 21st day of September, 2001, at 11:00 o'clock in the morning. For a list of pre-bid conference attendees see Amendment No. 1. Please note that post transcript notes, clarifications, and additions have been added to this document. U.S. Army Corps of Engineers personnel are identified as “USACE”.

MR. BRESLIN (USACE) (USACE): We want to make two announcements. First, this morning I mentioned when we were over at the southwest corner of the site when we were looking at the BP ARCO recovery system, I had mentioned that only three out of the four recovery wells, the RW wells were operational. In fact, all four are operational. We do have someone here from the consultant working for BP Amoco/Arco, so if we have questions on the recovery system, we can ask that person. The second announcement, there will be an amendment. The item that we know about that will be in the amendment is to bring some slag fill onto the site. We have a couple areas on the site. They're low areas where sometime in the last 100 years there's been an accumulation of tar at the surface and we need to fill the areas in with slag. We're going to use slag fill known, according to the Illinois Department of Transportation, as CMM-18.

Post transcript note: Refer to Amendment #2, SECTION 02722 for additional requirements for the slag aggregate fill material.

Question 1. MR. RESSI: Arturo Ressi of Treviicos. Do I understand that if somebody proposed an alternate method, you also have to propose a conforming method?

Answer: MR. BRESLIN (USACE): Let me see if I understand. If someone proposes an alternate cutoff wall method --

Question 1 (con't): MR. RESSI: Right. Because I'm quoting on page 02260-2 that says that you have to do a test section, and if it fails, "the offeror must provide as a backup a soil-bentonite slurry trench cutoff wall method which fully complies" blah, blah. So, in essence, am I correct in saying that if you propose an alternate method, you also have to propose a complying method should your method fail?

Answer: MR. BRESLIN (USACE): Correct.

Question 1 (con't): MR. RESSI: Which means you have to propose it going in,

or not?

Answer: MR. BRESLIN (USACE): You have to propose it going in, that's correct.

Post transcript note: The following is a part of paragraph 1.1.1 of SECTION 02260. "The offeror must provide as a backup a soil-bentonite slurry trench cutoff wall method which fully complies with these plans and specifications that will be implemented, at no additional cost to the Government, in the event the alternate method cannot perform satisfactorily, and describe how adjustments will be made to maintain the original construction schedule."

Question 2. MR. BHATIA: Victor Bhatia, of Clean World Engineering. The track that is to be replaced by the railroad, is the cost of that going to be borne by the railroad, or is that a cost that needs to be added to our proposal?

Answer: MR. BRESLIN (USACE): The railroad will bore the cost of picking up their track -- replacing their track, picking it up and moving it out of the way and putting it back down. That's part of their cost, the railroad's cost.

Question 3. MR. RESSI: Arturo Ressi of Treviicos. Are all the utilities abandoned, the ones that cross the -- I mean, is there any live utility?

Answer: MR. BRESLIN (USACE): Right. As far as we know, all the utilities are abandoned. As far as we know, all the utilities are dead. You still have to do, in Indiana, it's a ONE-CALL meet -- it's a utility locate meet. But as far as we know, all the utilities are dead, all the utilities are abandoned, but we still are having an inspection trench because there's a possibility that one of them could be live. We don't expect that, but the purpose -- one of the reasons with the inspection trench is to confirm that the utilities

are indeed dead before they're pulled out of the ground. But as far as we know, all the utilities on the site are dead, abandoned.

Post transcript note: The following is a part of paragraph 1.8.1 of SECTION 02215. "The Contractor shall schedule a coordination meeting with local utility and pipeline owners prior to inspection trenching to investigate and to allow owners to identify and mark service closure locations through, to, from, and along the abandoned ECI refinery site. The Contractor shall notify the Contracting Officer five (5) days prior to the meeting. The Contractor shall notify the Contracting Officer prior to commencement of work and during this Contract, in addition to the appropriate utility or pipeline owner, in the event that an active utility or pipeline is discovered during the survey investigations and inspection work. The utility lines shown on the Drawings may be abandoned or active. Any utility lines discovered that were not shown on the Drawings also may be an active utility. For all utility lines encountered, whether shown on the Drawings or not, it is the Contractor's responsibility to take the necessary actions to determine whether the utility line is abandoned or active."

Question 4. MR. BHATIA: How much product has been recovered from the recovery wells?

Answer: MR. BRESLIN (USACE): The question is how much product has been recovered from the recovery wells. Once again, BP Amoco/Arco is operating that system however, we're lucky enough to have a consultant here who's working for BP Amoco/Arco, Sid Glenn. And Sid, if you know the answer, it's -- if you don't know the answer, we'll put it in the amendment and get back to you next week.

MR. GLENN: Roughly 41,000 gallons. My name is Sid Glenn and I'm with Arcadis, Geraghty & Miller.

MS. OTT: Do you know when that system was put in place, or since -- or 41,000 gallons since when?

MR. GLENN: Since approximately 1992. And if we need to be more specific about dates and actual gallons, we can certainly come back to you on that.

Post transcript note. Per SECTION 00200 the following information is available for review at the Chicago District office.

- Monthly and quarterly operation reports, submitted by Arcadis Geraghty & Miller (ARCO's Consultant) to the Indiana Department of Environmental Management, covering the period of operation from November 1, 1998 until April 30, 2000. These reports include a summary of the oil quantity recovered and also well gauging data, including product layer thickness, for some of the existing wells located on the ECI property.

Question 5. MR. JOY: Terry Joy, Clean World Engineering. Can I ask what happens to that product, the free product that's recovered from the wells?

Answer. MR. GLENN: It's recycled.

Question 5 con't. MR. JOY: And it's owned by BP?

Answer. MR. GLENN: That's -- we're not prepared to go into what might be a legal question.

Question 6. MR. LEWIS: Joe Lewis with Recon. On the railroad track removal and replacement, if it goes over two weeks, is there any liquidating damages?

Answer. MR. BRESLIN (USACE): We state that you should assume that two weeks will be allowed by the railroad, and as far as we know right now, the two weeks will be allowed by the railroad. It's possible we'll be allowed more time than two weeks, but if during the course of the work if that two weeks changed, then we would -- if for some reason a railroad came to us and said that window had to be shortened or we could lengthen it, we would do so.

Right now for the purposes of the bid, assume two weeks. The work has to be done in two weeks. Don't assume that the railroad is going to give us more than two weeks with their tracks out of service.

Question 7. MR. SZYMANIK: Norm Szymanik with Superior Construction. The recovery system that's in place right now is lowering the water table to a certain degree. When that system comes out and the water table comes back up and we have to get water in certain areas, what do we do with the discharge? Is there any point we can discharge into? What happens to that discharge water?

Answer. MR. BRESLIN (USACE): The question is during any dewatering that's necessary for this project, where does that discharge water go? As part of this project, all the water has to get run through an oil/water separator, so part of this project is to have an oil/water separator on site to treat that water, and that would be water from dewatering the trench and also water -- the water from the pump test would also get run through -- has to get run through the oil/water separator.

Question 7 con't. MR. SZYMANIK: After -- once again, after -- once it goes through your portable oil/water separator and the water is technically clean, then could it be pumped into any system of any type, like the -- there's a -- I mean the municipal system or whatever?

Answer. MR. BRESLIN (USACE): Once it passes through the oil/water separator, the water out of that process can get discharged back into an infiltration gallery on site.

Question 8. MR. RYAN: My name is Chris Ryan, and I'm with Geo-Solutions. This railroad -- I understand there's two conflicts with the railroad. One is the one we were standing at, which is a relatively straightforward crossing, and the two weeks applies to that, and the other one is quite a much

longer one, it's about 1300 feet long, the conflict.

Answer. MR. BRESLIN (USACE): Right.

Question 8 con't. MR. RYAN: What is the time frame relative to that? Maybe it's in here. I don't know. And how is that going to phase with the other closure; is it going to be at the same time, or is it going to be when we get there?

Answer. MR. BRESLIN (USACE): The short answer is when you get there. In the specs, we require that the inspection trench and then the cutoff wall start at Station 78. Station 78 is just north of the crossing on the west side. We require the inspection trench to start there and the cutoff wall. You'll proceed with the inspection trench from Station 78, working clockwise north, east and then heading south to where we were standing on our first visit. That's roughly Station 45. At that point, the railroad will pull up those tracks for two weeks as you cross there with the inspection trench.

The crossing on the west side, which involves, you're right, I believe around 1300 feet, it's also handled as an option. Hopefully, that work -- the railroad will be relocated by the time the inspection trench reaches the west side crossing. If it's not, if the tracks aren't relocated by that time, then we'd have to use the option for the inspection trench in that area, but it's hoped that that railroad track on the west side will be relocated by then. But we do have the options in the contract to handle if it's not. Does that answer it? Okay.

Question 9. MR. TILTGES: Dan Tiltges with Inquip. Well, along the same lines, if you arrive at that and that's an option, and if the railroad is removed, then the quantity for the slurry trench in that area, is it paid under this original item, or is it paid under the item of bid option?

Answer. MR. BRESLIN (USACE): If you reach there, if the contractor reaches that point --

Question 9 con't. MR. TILTGES: And it's gone.

Answer. MR. BRESLIN (USACE): -- and it's gone, it's physically gone, it's not in the way, it's under the original bid item to get paid for that because that option then wouldn't be exercised.

Question 9 con't. MR. TILTGES: All right. So the 219,000 square feet, is that for the entire circumference of the job, or is that for all of the areas except for these items?

Answer. MR. BRESLIN (USACE): All except those items. The total is around 380,000 square feet.

Question 9 con't. MR. TILTGES: So then if it's -- if the railroad is gone, the 219 increases by the 70,000 or 80,000, I guess, 84,000 after unit rate that would be up here, the lower unit rate.

Answer. MR. BRESLIN (USACE): Correct. If the railroad -- if the railroad hasn't relocated when you physically reach the west side, you're right, that quantity, there's no option to exercise, and the quantity is added to the line item -- for the record, Mr. Tiltges is pointing to the first bid item for the cutoff wall, not the option bid item. So if the railroad's physically gone or relocated, the total quantity on the job would be 380,000 square feet. In other words -- sorry. Let me clarify. If there was no railroad at the site and there was no ARCO system at the site, the total quantity would be approximately 380,000 square feet of cutoff wall and 10,700 linear feet of inspection trench.

Post Transcript Note. The 2000 lineal feet of south inspection trench and cutoff wall has been deleted from this contract.

Question 9 con't. MR. TILTGES: Is the only option whether the railroad is there or not; you're going to put the wall in one way or the other?

Answer. MR. BRESLIN (USACE): Right. There is an option, also the south option which is the 2,000 feet of south wall, and that's for the ARCO system.

Post Transcript Note. The 2,000 feet of south wall has been deleted from the contract.

Question 9 con't. MR. TILTGES: And the option is really the time, the extra time to come back and do that at a later time, that's why it's a separate item; is that right?

Answer. MR. BRESLIN (USACE): Correct.

Question 9 con't. MR. TILTGES: You're going to do it; it's just that it will be done at a different time frame?

Answer. MR. BRESLIN (USACE): Correct.

Post Transcript Note. The south cutoff wall and inspection trench will not be done.

Question 10. MR. KATTALIA: Dan Kattalia with Sevenson. As far as the proposal's concerned and the schedule that we submit with the proposal, do we include the options, or do we figure it at a base bid at the 380,000 square feet that's going to be continuously done?

Answer. MR. BRESLIN (USACE): The schedule that you'll submit with the proposal, the total duration is 1,010 days. In the specifications, if the options are going to be used, they'll be exercised 100 -- I believe it's 160 days prior to the end of the contract. So in other words, at day 950 of the contract, the options would be exercised by that point if they were going to be exercised.

Answer. MS. OTT (USACE): We're just going to check something for a second.

Answer. MR. BRESLIN (USACE): I apologize. The project duration is 1,010 days. The optional bid items can be added to the contract at any time up to day 850, sorry, 850, so 160 days before the end of the contract, which would be day 850, the options would be exercised by that point.

Post Transcript Note. The revised project duration is 730 days with the railroad options to be exercised by day 625 if necessary.

Question 11. Mr. Tiltges, I think you mentioned would all the options be exercised.

Answer. MR. BRESLIN (USACE) It is possible that at day 850 of the contract the ARCO system might still be on site, it's possible, we don't think it's probable, but if day 850 comes and the ARCO system is still there for whatever reason, then that option would not be exercised, so I apologize.

Answer. MS. OTT (USACE): Or the railroad options likely, as well.

Post Transcript Note. The Contractor shall assume that the BP Amoco/ARCO system will be operational during the entire contract duration.

Question 12. MR. RESSI: Excuse me. As a follow-up of what you're saying, meaning that the cutoff would not be complete, and that this contract will be procured later, possibly?

Answer. MR. BRESLIN (USACE): Possibly.

Question 13. MR. RYAN: Could I ask just a general question? I think the formal bid -- Chris Ryan from Geo-Solutions. I think the formal bid question time is already expired, if I'm not mistaken. Are you going to extend the amount of time that we have to ask questions so we have a chance to, you know, having seen the site now, looking at the documents with some hindsight and then now ask questions; is that possible, written questions?

Answer. MS. OTT (USACE): Yes, we will address written questions after today. They must be submitted in a written format, and John Breslin is the point of contact for those questions.

Question 13 con't. MR. RYAN: Until what date?

Answer. MS. OTT (USACE): We anticipate that this amendment for today will be issued within the next two weeks, so that's when we would ask that the written questions be submitted by, within two weeks from today.

Question 13 con't. MR. RYAN: What's the bid date then?

Answer. MS. OTT (USACE): The bid date is scheduled for October 15th.

Question 13 con't. MR. RYAN: Doesn't work.

Answer. MR. BRESLIN (USACE): Well, two weeks from today is the 5th of October. The bid date's the 15th.

Question 14. MR. FISHER: Mike Fisher with Geo -Con. If you don't get a question until the 5th, do you have time to turn the question around back to us before the 15th?

Answer. MR. BRESLIN (USACE): If everybody in the room waits till the 5th -- If we get a hundred questions on October 5th, I will not be able to answer them all in a manner and get an amendment out on those questions. So if we get a lot of questions on the 5th of October, we'll have to make a decision if we have to extend that October 15th deadline. That's all I can say right now.

Answer. MS. OTT (USACE): If we can move up the deadline, we can say a week from today.

Answer. MR. BRESLIN (USACE): If we say a week from today, then I can get answers out. Once again, we'd obviously like to get the contract proposals in on the 15th of October. Everyone knows how long it takes to award a contract, and the sooner we can get the proposals in, the sooner it can get awarded and have someone working, hopefully, in the spring.

Question 15. MR. RESSI: I have a question. You're not into your next fiscal year. Do you have the money for the project?

Answer. MR. BRESLIN (USACE): There is a continuing contract clause in the specification, so we do have the money.

Answer. MS. OTT (USACE): The continuing contract clause specifies how much money is currently available.

Question 15 con't. MR. RESSI: Which is? I didn't pick it up.

Answer. MS. OTT (USACE): And I don't have it with me. There was a very minimal amount listed in the clause.

Question 15 con't. MR. RESSI: Right. And your fiscal year starts, yeah, ending September 30th, so you don't have the appropriation yet for next year, so --

Answer. MR. BRESLIN (USACE): Well, the amount's in here. I don't know it off the top of my head.

Answer. MS. OTT: It's a minimal amount because that's referring to this fiscal year.

Question 15 con't. MR. RESSI: Correct.

Answer. MS. OTT: And that's all we can say at this point.

Question 15 con't. MR. RESSI: I understand. Again, with all the things that are going on now, who knows if they're going to have the money appropriated for remediation.

Answer. MR. BRESLIN (USACE): Next question?

Question 16. MR. WOODDELL: Ken Wooddell with Layne. Is there potable water on site?

Answer. MR. BRESLIN (USACE): No.

Question 16 con't. MR. WOODDELL: Is it available nearby, or can it be hooked up on site to the existing hydrants just inside the gate?

Answer. MR. BRESLIN (USACE): There are -- there are quite a few hydrants on the site. As far as I know, that system is not operative. So if someone was to hook up to a hydrant at the entrance, I would not -- I would assume that system is not operable.

MS. OTT (USACE): We just wanted to clarify something. Regarding the question that you had on when you can -- if you can submit more written questions. You know, in the interest of fairness, we're saying two weeks from today. We
would very much appreciate that you submit your written questions by a week from today, if that's possible. So that way, we're more likely to be able to keep the date as it stands for when the proposals are due.

Question 17. MR. RESSI: As a follow-up to the previous question, since your fiscal year is September 30th and your bid is October 15, would you know before the bid if you have the funds?
Answer. MS. OTT (USACE): I think you have to base your bid on what the specs say and read the continuing contract clause and base your bid accordingly.

Question 18. MR. SARA: Marty Sara from ERM. You mentioned that additional information would be available at the Corps office. I assume you mean the one in downtown Chicago rather than the one in Griffith, Indiana?
Answer. MR. BRESLIN (USACE): Right, at 111 North Canal. I have a box up front. Several of the items that are listed in Section 320 are in this box. People can look at these today after the question-and-answer session, or come to 111 North Canal.

Question 19. MR. WOODDELL: Ken Wooddell with Layne Christensen again. With regard to 320 or, I guess, with regard to the drilling, what is the percentage of completion of holes attempted?
Answer. MR. BRESLIN (USACE): You're asking for all the investigations that have been done on site?
Question 19 (con't) MR. WOODDELL: Basically, right, what percentage of

refusal, or out of 100 holes, how many were successfully taken to depth without hitting railroad ties or concrete chunks?

Answer. MR. BRESLIN (USACE): I don't know. We have some of the reports from basically the last ten years of site investigations. There is verbiage in those reports that describe probably not all the examples, but numerous examples of say attempts to get a 20-foot well in the ground, and the driller made say 6 attempts in a 25-foot radius and had to move completely to another location. So to answer your question, I don't know the percentage, but these reports do have a lot of verbiage on -- but once again, that's not to say that all the attempts that were made were recorded on a specific log. In other words, sometimes it's noted in the remarks column of a log how many attempts they made to get the hole down before they moved it. Some logs you look at, maybe there's nothing mentioned, and you think that the well went in on the first attempt they made it whereas in reality they made several attempts but did not note then on the log. But feel free to look in these reports up here.

Question 20. MR. LEWIS: Joe Lewis with Recon. With reference to the slurry trench, it's calling in the specifications for 4% by dry weight of bentonite. It's also calling for the bentonite wall to be a $1.0x10^{-7}$ centimeter. Which one is it? Is it if you can meet 10^{-7} with less than 4%, is that acceptable, or does it have to have 4% dry flat?

Answer. MR. BRESLIN (USACE): The wall definitely has to meet $1.0x10^{-7}$.

MR. LEWIS: That's the overall criteria?

Answer. MR. BRESLIN (USACE): Correct.

Question 21. MR. RYAN: Are you saying you can put in less than 4%?

Answer. MR. BRESLIN (USACE): To clarify, the $1.0x10^{-7}$ centimeters per second has to be over the 30 inches. Regarding the bentonite content, on page 41 of

Section 2260, note No. 2, "The minimum bentonite content shall be a minimum of 4% percent." And then in Section 2260, page 10, "The contractor can elect to increase the bentonite content above the 4% minimum."

Question 22. MR. RESSI: So they both have to be --

Answer. MR. BRESLIN (USACE): Has to be 4% minimum.

Question 23. MR. RYAN: Chris Ryan again. I was going to ask at the conclusion of today's meeting that the attendees' list from today could be made available to us either by copying here at the college or allowing us to look at it for a few minutes before we leave. If you wait for two weeks, that's not much help to us.

Answer. MS. OTT (USACE): You're welcome to look at it before you leave.

MR. RYAN: Is it here someplace?

MS. OTT (USACE): (Indicating).

Question 23 (con't). MR. RYAN: What about the sign-in sheet for the site, I guess, is what I'm interested in.

Answer. MS. OTT (USACE): Okay. We have that, also. You're welcome to look at it.

Question 23 (con't). MR. RESSI: Could you make copies of it?

Answer. MS. OTT: Not at this time. We'll be submitting it when the amendment goes out with the transcript.

Post Transcript Note. Sign-in sheet was provided in Amendment 1.

Question 24. MS. WESOLEK: Dana Wesolek with Slurry Systems. In submitting an alternate bid, we are required to provide you with cutoff wall specs, spec for a test section and then a plan sheet. My big question is, is there an

advantage or can you go closer than 50 foot to that fence line? Where is that 50 foot coming from as far as being the distance from the trench line?

Answer. MR. BRESLIN (USACE): You question is on the east and west sides, the distance is 50 feet for the wall from the fence line. It's 40 feet on the canal side. The 50 feet was determined based on final closure of the site, which is not part of this contract, which is going to be done in 35 years, there will be a 35-foot high pile of sediment here with a cap on it. There is going to be a ditch, 35 years from now, inside the fence to handle runoff. So basically it's just geometry -- we have to put the ditch in and an inward gradient system.

Question 25. MR. GLENN: Sid Glenn with Arcadis. How did you select the 40 feet on the canal side?

Answer. MR. BRESLIN (USACE): The 40 feet there was selected -- that area, is a future unloading area where the barges come in and unload sediment over the next 35 years. The canal wall, as far as we can tell, was installed in the early 1960's, supported by batter piles on 6-foot centers. The 40 feet was determined because that's the closest we could come without possibly running into the batter piles that support that wall.

Post Transcript Note. The 2000 lineal foot of south cutoff wall has been deleted from this contract.

Question 26. MR. TILTGES: Dan again with Inquip. Let me ask you, there is a waler behind that. Is the waler tied to a batter pile?

Answer. MR. BRESLIN (USACE): I believe so. There's two -- two drawings in the set. One drawing is the 1960''s plan and section of that wall, and one of the other drawings was a 1975 plan drawing. But the 1960 drawing in the set of plans and specs, I do believe shows that waler.

Question 26 (con't) MR. TILTGES: Tied back to the batter pile?

Answer. MR. BRESLIN (USACE): I believe so, tied back to the batter pile.

MR. SCHMEDNECHT: Fred Schmednecht, Slurry Systems. There's also a tie-rod system. That wall was put in in about 4 pieces really over a period of time even going back beyond 1960. So do you have those drawings, too?

Answer. MR. BRESLIN (USACE): No we don’t have those drawings. That's a good point. Obviously, the site wasn't built in 1960; it was built in the late 1800s or early 1900s. There was probably several wooden Wakefield walls there at one time and wooden bulkheads that extended north/south onto the site, possibly. That 1960 drawing, we wish we would have had the complete set of those drawings that went out in that package in -- all we had was that 1960 drawing, and what we've inferred is they replaced sections or all of the wall in 1960. The steel structure that was there before, maybe the wooden Wakefield wall that was there prior to 1960, we couldn't tell from the drawing, were the old sheets pulled? So unfortunately that 1960 drawing is the only drawing we have in that area; however, there was always a canal, and some type of wall going back to the early 1900’s. So you're right, that's the only drawing we have, and the amount of other wooden or steel pieces in the ground out there, we don't know.

MR. SCHMEDNECHT: Every time they added a section, there was a return wall that you had to pull and add onto. In about 1967, there was about 350 foot added on the far end, lineal wall feet of dock wall, and that all has tie-rods in it.

MR. BRESLIN (USACE): By the far end, you mean the west?

MR. SCHMEDNECHT: West end.

MR. BRESLIN (USACE): In any event, that's the one drawing we do have of that area, and there is a lot of -- it shows the steel, it shows the bulkhead. At least it shows what was designed. And like I said, it doesn't appear to be an as-built.

MR. SCHMEDNECHT: Once you get beyond that, you start getting into the plat

itself, and I'll speak for what I did myself. There's hundreds of piles supporting facilities about 40 or 50 foot from that sheet metal wall.

MR. BRESLIN (USACE): The drawing we're referring to is R, as in Robert, 2, and the 1975 drawing, which is a plat of the plant, is R-1.

Question 27. MR. RESSI: As a matter of curiosity, why is the payline for the cutoff wall counted one foot below existing ground surface?

MR. BRESLIN (USACE): The payline is one foot because the cut off is one foot below grade.

Question 27 (con't). MR. RESSI: Do you have a cap?

MR. BRESLIN (USACE): There is a clay cap, yes.

MS. OTT (USACE): Does anybody have any other questions?

Question 28 (con't) MR. TILTGES: Dan with Inquip. Did anyone -- has there been -- and they may be all available -- any permeability tests on backfill, soil backfill on this project prior?

MR. BRESLIN (USACE): No.

Question 29. MR. NAGUIB: Aiman Naguib with Williams. Where did the 4% addition come from? Did you do any trial mixes to specify that minimum bentonite content?

MR. BRESLIN (USACE): No, no trial mixes were done.

Question 29 (con't) MR. NAGUIB: The other part of the question, was the 4% strictly dry addition to dry unit weighted soil, or can we assume that some will come from the slurry and some will come from dry addition?

Answer. MR. BRESLIN (USACE): The 4% is, the dry addition.

Question 29 (con't). MR. NAGUIB: What dry unit weight of the soil do we assume for that 4% as an average? Can you give us that maybe in the addendum?
Answer. MR. BRESLIN (USACE): No, you have to base it on the information in the specifications.

Question 30. MR. TILTGES with Inquip. It's just a comment, really, but the design is really 4 or $5x10^{-8}$, even though, I think if I understand the spec, it says that after pre-pour volumes, that in order to have the backfill mix approved, the permeability can be no worse than $5x10^{-8}$. So it will very likely take more than 4% bentonite because you're going to have to design for something better than $5x10^{-8}$. Did you read it that way?
Answer. MR. BRESLIN (USACE): Correct. What Mr. Tiltges is referring to is the compatibility testing required the permeability is $5x10^{-8}$.
Question 30 (con't). MR. TILTGES: No worse than, so it really needs to be designed better than that, the worst test you could have, in order to have an improved design mix.
MR. BRESLIN (USACE): Correct.
MS. OTT: Does anyone have any more questions? No. If there's nothing else then -- Doug, did you want to say something?
MR. ANDERSON: Doug Anderson, Corps of Engineers, and my question is I'd like to know if anybody is planning to return to the site?

(No response).

MS. OTT: Well, thank you for coming, and, again, appreciate your written comments within the next week.

(End of conference).

Contractor Questions

1. The wage rates posted in the documents did not include the wage rates for Local 578 - Piledrivers who will have jurisdiction for any installation or removal of sheeting or piling on this site. Should these be included in the amendment?

ANS: Per Section 00830, pile driver is included in "Power Equipment Operator Heavy/Highway – Group 1".

2. The documents indicate that only $ 100,000 is available in the "current " fiscal year. This is insufficient to perform the work required prior to the onset of the next fiscal year. Will this be addressed in the Amendment?

ANS: No change will be made to the continuing contract clause. Planholders should base their bids on the specifications.

3. Section 01110, page 5, Paragraph 3.2.4 indicates the railroad relocation will be by others, but it does not say who must pay for it. Also, on page 6, Paragraph 3.2.4.1 tells us that the track removal and replacement will be done by the railroad, but again does not mention who must pay for this work. Please clarify if the costs of this work are to be borne by the Contractor.

ANS: The work and the cost will be borne by others.

4. Is it the Corps intent to provide the permit conditions for the discharge of water from the oil/water separator? Does the Corps have the quality criteria already or does the contractor have to get the permit?

ANS: The discharge of the water from the oil/water separator will be infiltrated back into the ground; consequently, a discharge water quality has not been specified, and a permit is not required to allow effluent water seep back into the ground. However, the following changes (in ***bold italics***) have been made to Section 11500:

1.4.1 Design Requirements

The Contractor shall furnish and install an oil/water separator with an integral oil storage compartment and solids collection chamber. The separator shall comply with

the requirements of this specification and shall be approved by the Contracting Officer. The separator shall be comprised of a tank with an inlet compartment (to settle out solids), an oil separation compartment, an integral oil storage compartment or area, a solids collection chamber, and an outlet compartment. ***Minimum residence time of the oil/water separator shall be thirty (30) minutes.*** The integral oil storage compartment will allow for holding the oil removed by the unit until there is enough to pump to the storage tanks. The solids collection chamber will be designed to allow periodic removal of the solids. The oil/water separator shall be designed in accordance with design principles commonly accepted for sedimentation or clarification chambers at wastewater treatment plants and applicable sections of the American Petroleum Institute, API Publication 421 and ETL 1110-3-466, Selection and Design of Oil/Water Separators at Army Facilities.

2.1.3 Criteria

There are multiple choices in the selection of oil/water separators, including commercially available, pre-fabricated units, and cast-in-place concrete separators. The design of the system shall incorporate local conditions, performance requirements, project characteristics, and usability of the system. ***The oil/water separator shall be designed for a minimum residence time of thirty (30) minutes.*** The Contractor shall not rely solely on manufacturer claims concerning the efficiency and capacity of their equipment. The Contractor shall analyze systems based on physical size and capacity of the system to produce a suitable effluent and oil recovery based on the flowrate, water temperature, specific gravities of oil and water, viscosity of fluid, and the minimum oil particle size to be removed.

2.1.4 Tests

Performance testing shall be required after the unit is installed to satisfy performance requirements.

2.2 COMPONENTS

2.2.1 General Requirements

The separator and all system components shall be compatible with the free product and wastes to be handled. The

components include but are not limited to a separation chamber, water sump, product sump, and oil storage tank. ***The separator and all system components shall be designed such that the reinfiltration system (which shall be designed and installed by the Contractor) does not clog and limit the ability of the water effluent to reinfiltrate back into the shallow aquifer.***

The Contractor shall take appropriate measures to winterize the oil/water separator if it is to be used during the winter months. Equipment and wiring must be in accordance with NFPA 70, with proper consideration given to environmental conditions such as moisture, dirt, corrosive agents, and hazardous area classification.

The oil/water separator shall accommodate uncontrolled surges of water, oil, or oil/water mixtures ranging from zero flow up to one hundred per cent of maximum hydraulic throughput capacity.

The oil/water separator and oil storage tank shall have provisions to prevent oil spills due to overfilling and other causes, such as a high level alarm in the oil storage tank or an oil/water separator that automatically shuts down the de-watering pumps.

5. Will all investigation derived refuse from the soil borings, monitoring wells, etc. be disposed of in the identified debris stockpile?

ANS: Per Section 02210, paragraph 1.5.1 states in part that, “After completion of the cutoff wall, and after approval of the Contracting Officer, all soil samples shall be disposed of on-site at the stockpile location shown on the Drawings”. Per Section 02101, paragraph 3.2.3, “All well materials shall be disposed of on-site at the stockpile location shown on the Drawings”.

However, any oil and water collected during the test solution sampling or during the well development must be treated in the oil water separator; per Section 02260, paragraph SD-09a states in part that, “All oil and water generated during the test solution collection sampling (i.e., by bailing, pumping, or by other means) shall be treated in the dewatering process system as stated in SECTION 02150 …”

6. Will a Professional Geologist or Professional Engineer be required on each drill rig for the test wall soil borings and monitoring wells, or just on the pre-construction borings (Section 02210, para. 1.7.1)?

ANS: Yes. Per Section 02260, paragraph 3.2 states in part, "The Contractor shall provide a qualified, licensed Geologist or Engineer experienced in subsurface exploration to oversee all drilling and sampling operations. This individual shall be responsible for the preparation of a separate drilling log for each boring as discussed in SECTION 02210".

7. Are there any professional qualifications for the Quality Control Inspector (Section 02260, para. 2.4)?

ANS: No.

8. Concerning the waste streams that are designated to be removed from the subject site:
   a. Solids; brush, concrete, pipes, soil, and miscellaneous C&D debris. What will the classification of this waste be: special nonhazardous, special hazardous, C&D, or municipal solid waste? Since this is a RCRA site, will analytical be provided to substantiate the classification?
   b. Liquids/water. The analytical provided states several listed hazardous waste compounds, and some that may be characteristically hazardous and have PCB hits that are above the TSCA limits. In addition to the hazardous possibilities, there is also the question of all the water being treated as a TSCA waste.

ANS: a. Per Section 02120, Paragraph 3.1.1, "The Contractor shall identify all waste codes applicable to each hazardous waste stream based on requirements in 40 CFR 261 or any applicable state or local law or regulation. The Contractor shall also identify all applicable treatment standards in 40 CFR 268 and state land disposal restrictions and shall make a determination as to whether or not the waste meets or exceeds the standards. Waste profiles, analyses, classification and treatment standards information shall be submitted to Contracting Office for review and approval." Per Section 02120, Paragraph 3.2.1, "Analyses for contaminated material to be taken to an offsite treatment, storage, and disposal (TSD) facility

shall conform to local, State, and Federal criteria as well as to the requirements of the TSD facility. The Contractor is responsible for adequately characterizing all waste for disposal."

b. The discharge of the water from the oil/water separator will be infiltrated back into the ground. Other liquids, such as the oil that will be collected for off-site disposal, will need to be treated as a TSCA waste if above TSCA limits.

9. Referencing section 02215, are any soils contaminated with any hazardous and/or toxic waste considered containing organic matter or for any other reason unacceptable and therefore unsuitable for fill or backfill?

ANS: Per Section 02215, paragraph 1.3.1 states in part, "Satisfactory materials for use as fill or backfill shall consist of the on-site fill and silty sand. Satisfactory materials shall be soils that are free from both organic matter and frozen materials. This construction project may require handling hazardous and toxic waste (HTW) defined under the Resource Conservation and Recovery Act (RCRA) or the Toxic Substances Control Act (TSCA). Information on the various contaminants found in the site soils is provided in SECTION 00200 INFORMATION AVAILABLE TO BIDDERS. On-site soils containing contaminants are suitable for use as fill or backfill". Per Section 02215, paragraph 1.3.2 sates in part that, "Unsatisfactory materials include, but are not limited to, those materials classified in ASTM D 2487, as PT, OH, OL, or those materials containing organic matter, frozen materials, or building/construction debris from razing of previous on-site facilities".

10. Under section 02215, 1.4, Submittals Obstruction Conditions and Closure Details, "The Contractor shall prepare detail drawings including plan and cross-section details showing the conditions, size, profile, material, location, and plugs for all obstruction removals". When is this submittal due?

ANS: This submittal shall be submitted to the Contracting Officer within 60 days of completing the inspection trench and obstruction removal.

11. Under section 02215, 1.4, Construction Limits, access is restricted to “all work within the work limits shown on the drawings”. Will the Contractor have unrestricted access to all interior site areas? If not, how will the Contractor access the designated borrow, stockpile, and water processing areas and locate/relocate the dewatering pipelines to the process area?

ANS: Sheets C-01 and C-02 have been revised to more clearly show the work limits for clearing and grubbing. Most of the rest of the site is available for these other contractor activities, with the exclusion of the areas identified as “Railroad Real Estate Exclusion”. Note also the “access area between project locations” which can be used for dewatering pipelines. In addition, note that the BP/ARCO oil recovery system will remain onsite throughout the life of the contract, and will not be relocated to accommodate work under this contract.

12. Under section 02215, 3.2.1, “excessive excavation” will be determined by the Contracting Officer. How will fault be determined and measured, in technical and construction terms, when the subsurface conditions are unknown, highly variable, and very sensitive to a multitude of site conditions notwithstanding the dewatering performance, construction methods, time of year, etc.

ANS: The sentence “Any excessive excavation, as determined by the Contracting Officer due to the fault or negligence of the Contractor, shall be backfilled to grade and shall be done by and at the expense of the Contractor” has been removed from paragraph 3.2.1 of Section 02215.

13. Under section 02215, 3.2.1, compaction and measurement is required for any inspection trench excavated wider than the cutoff wall width (30-inches). How will this work be compensated, particularly when the specification allows sloping of excavation (section 1.4). Similarly, the inspection trench width is required to be 24-inches minimum, yet it is nearly impractical to be limited to the maximum 30-inch width, considering the site conditions.

ANS: Per Section 02215, paragraph SD-04 states in part that, “The Contractor is responsible for all excavation shoring and bracing, including trench boxes as necessary,

to complete the obstruction location, identification, inspection, plugging, and removal work. The inspection trench and obstruction inspection/removal excavations will require some form of shoring, sheeting, bracing, and/or sloping…… If trench boxes are to be used, the Contractor shall submit drawings and sketches for all proposed trench boxes required to perform and complete the work". Regardless of the trenching or excavation method chosen by the Contractor, the cost of backfilling and compaction should be included in the line items for inspection trench and obstruction removal.

In addition, per Section 02215, paragraph 3.2.1 states in part, "For any inspection trenches or excavations that are wider than the cutoff wall, the trench or excavation shall be backfilled and compacted. The backfill shall be placed in lifts with a maximum loose thickness of 8 inches, and shall be compacted to 95 percent of maximum dry density per ASTM D 698. The trench or excavation shall be kept dewatered during placement and compaction of the backfill". If a soil-bentonite wall (minimum required width is 30 inches) is proposed than any inspection trench or excavation made to remove obstructions wider than 30 inches shall be backfilled and compacted. If an alternate cutoff wall is proposed that, for example, would be 12 inches wide, than the entire inspection trench (which has to be a minimum of 24 inches wide) and any excavation made to remove obstructions would have to be backfilled and compacted.

14. Under section 02215, 3.2.2, "active" utility lines found are to be backfilled and dealt with later, if determined inactive, and at the Contractor's expense. Can this requirement be revised and handled as a change order since it cannot be determined in advance, by who, and how long it will take to make that determination and the Contractors' return cost (i.e. dewatering, schedule impact to the ongoing work, etc.).

ANS: Per Section 02215, paragraph 3.2.2 states in part that, "The utility lines shown on the Drawings may be abandoned or active. Any utility lines discovered which were not shown on the Drawings also may be an active utility. For all utility lines encountered, whether shown on the Drawings or not, it is the Contractor's responsibility to take the necessary actions to determine whether the utility line is abandoned or active. If the

line is active, the Contractor shall immediately inform the Contracting Officer, mark the location of the utility, backfill the inspection trench, skip over the unknown utility, and continue with the trench on the other side of the utility. If it is subsequently established that the utility is inactive, then the Contractor shall return, at a later date, to the location for excavating, removing and plugging, or capping the utility. The cost for terminating and backfilling the inspection trench, marking the location of the active utility, skipping over the active utility, and continuing with the trench on the other side of the active utility shall be incidental to the cost of the inspection trench". The Contractor should assume that if they are required to return to the location to remove and plug the utility, the determination that the Contractor needs to return will be made within 30 calendar days of notifying the Contracting Officer of an active utility.

15. Under section 02215, 3.3, if the Contractor elects to work during periods when temperatures are below freezing and maintains excavated material thawed, can the excavated materials be used as fill and backfill?

ANS: Per Section 02215, paragraph 3.2.1 sates in part that, "Excavated material not satisfactory for backfill shall be placed in the debris stockpile area. As stated in part of paragraph 1.3.2, "Frozen soils are also considered unsatisfactory soils and shall not be used as backfill. Frozen soils shall be placed in the debris stockpile. If the Contractor elects to perform excavation activities during the winter months, any frozen soils excavated shall be stockpiled in the debris stockpile but will not be measured for payment as unsatisfactory materials".

In addition, per Section 01270, paragraph 1.2.13.1 states in part that, "This bid item applies to … unsatisfactory material as defined in SECTION 02215…..No separate payment shall be made for excavating and stockpiling frozen soils".

If the Contractor elects to perform excavation activities during the winter months, when sub-freezing temperatures will occur during nights and over weekends, all fill placed during the day shall be compacted to the required density at the close of the day's operation. The surface of the final compacted layer shall be smooth. All fill material must be free of snow, ice and frozen soil before placement

and compaction. **Under no circumstance is fill to be placed when temperatures are below freezing, i.e. 32 degrees (°F).**

16. Are there any schedule working hour limitations?

ANS: Refer to Section 00700, Clause 52.236-7, PERMITS AND RESPONSIBILITIES, which states in part that: "The Contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses and permits, and for complying with any Federal, State, and municipal laws, codes, and regulations applicable to the performance of the work."

East Chicago, Indiana Municipal Ordinance 9.08.090, Noise--Enumeration, states in part that: "The following acts are declared to be violations of this section, but such enumeration shall not be deemed to be exclusive, namely: ...G. The erection, including excavation, demolition, alteration or repair of any building or structure other than between the hours of seven a.m. and six p.m. on weekdays, except in case of urgent necessity in the interest of public safety;" The identification of the aforementioned municipal ordinance is not intended to be an exclusive listing of all possible limitations and the Contractor must comply with the provisions in Clause 52.236-7 noted above.

17. Are the power lines crossing the site active? If not, can they be re-activated and who should be contacted?

ANS: Those lines are active and supply power to the BP Amoco/ARCO Oil Recovery System.

18. Are there any water lines still active onsite? Will the city fire hydrant system be available for use?

ANS: As far as the Corps knows, the water lines are not active. Interested contractors should contact the City of East Chicago regarding use of the fire hydrant system.

19. Under section 01100-4, paragraph G states that between Station 45+00 and Station 43+00 shall be completed as expeditiously as possible and in accordance with the required time frame agreed upon by CSX. What are these requirements and the estimated schedule by CSX (01110-6, 3.2.4.2)?

ANS: Per Section 01110, paragraph 3.2.4.1, “The east railroad crossing is located at approximately STA. 43+00 to 45+00. A single line of track, approximately 50 feet, will need to be temporarily taken out of service for approximately 2 weeks each for the inspection trench and cutoff wall installation. The track removal and replacement will be done by the railroad; the Contractor must coordinate with the railroad on work timing”.

The CSX contact name and phone number is Bruce Fowler, (708) 832-2254. CSX had previously indicated that a temporary rail spur closure of up to two weeks at a time would be possible. The Contractor shall schedule and coordinate all temporary rail spur closures with CSX.

Regarding the reference in the question to 01110-6, 3.2.4.2, the railroad relocation will be completed by others under separate contract. See Note No. 2 of the Price Breakout in Section 00010 regarding terms for awarding the option to construct the inspection trench and cutoff wall at approximately Station 76+00 to 89+00.

20. What is the time schedule for BP Amoco/ARCO to dismantle the existing oil recovery system (01110-6, 3.2.4.3)?

ANS: Optional bid item 0019 to construct the 2000 lineal feet of inspection trench and cutoff wall between approximately Station 00+00 to 20+00 has been deleted from the solicitation, therefore the question is no longer relevant. The Contractor should assume that the BP Amoco/ARCO system will be operational for the entire contract duration (i.e., 730 days). This area is off limits as a staging, storage, or stockpile area.

21. How will the USACE compensate the Contractor for additional cost after the Item 0013 Test Section Installation, Sampling and Testing, if the sampling and testing results do not match the Contractors’ cost scenario for Item 0012 Cutoff Wall Installation (what if the Contractor is required to use more or less bentonite for the cutoff wall)?

ANS: The will be no additional compensation for failing test sections. Per Section 01270, paragraph 1.1.6.1, “The

test section or sections will be measured as one unit regardless of the number of test sections performed, with payment contingent upon the acceptance of the Test Section Compliance Report as discussed in SECTION 02260 SOIL-BENTONITE SLURRY TRENCH CUTOFF WALL. Payment for the test section shall be made at the contract lump sum price".

In addition, per Section 02260, paragraph 1.1.1 states that, "The offeror of a proposed alternate method shall also provide a proposed specification and plan sheet(s) with details for the cutoff wall test section. The proposed specification and plan sheet(s) shall be submitted with their proposal. The test section specification must include the following: pump test monitoring, borings, in-situ sampling of the wall, compliance report, and performance requirements at least as stringent as those specified in this specification section. The test section will be measured as one unit regardless of the number of test sections performed. Not more than 2 test sections will be allowed to meet the performance requirements of the proposed alternate cutoff wall method. If these 2 test sections fail, the Contractor will be required to install a soil-bentonite slurry trench production cutoff wall and install an additional test section at no additional cost to the Government until the test section passes the performance criteria. The offeror must provide as a backup a soil-bentonite slurry trench cutoff wall method which fully complies with these plans and specifications that will be implemented, at no additional cost to the Government, in the event the alternate method cannot perform satisfactorily, and describe how adjustments will be made to maintain the original construction schedule".

There will be no additional compensation for using more than 4% bentonite. Per Section 02260, paragraph SD-09 (e)states in part that, "One test should be performed on a backfill mix representing the minimum required bentonite content (4% bentonite by dry weight of the soil-bentonite backfill); …For these short-term permeability tests, the permeability determined at the conclusion of the test using the 4% bentonite content shall be no more than $5x10^{-8}$ cm/sec. If the permeability test result for any of the 4% bentonite samples is greater than $5x10^{-8}$ cm/sec, the fines content (soil particles finer than the openings of a No. 200 U.S. sieve as determined using ASTM D 422) shall be increased using off-site borrow material. The borrow shall be from a commercial quarry and shall be approved by the

Contracting Officer. The fines content shall be increased in 5% increments until the permeability is less than $5x10^{-8}$ cm/sec. This fines content will then become the minimum required fines content for the long-term compatibility testing and the test section and production walls. The Contractor can elect to increase the bentonite content above the 4% minimum provided that the permeability test result is no more than $5x10^{-8}$ cm/sec. This bentonite content will then become the minimum required bentonite content for the long-term compatibility testing and the test section and production walls. No separate payment will be made for importing off-site borrow material or increasing the bentonite content to meet the permeability requirements".

22. What are the schedule hours for the "Utility" relocation crews (others)? Who coordinates the work with them and who pays for the utility hours worked? What are "their" limits of work inside/outside the fence?

ANS: Per Section 02215, paragraph 3.2.2, "The cost for terminating and backfilling the inspection trench, marking the location of the active utility, skipping over the active utility, and continuing with the trench on the other side of the active utility shall be incidental to the cost of the inspection trench".

The actual relocation (and cost) of active utilities will be done by others. According to Section 01270, paragraph 1.2.16.1, "Payment shall be made at the contract unit price for temporary termination of the cutoff wall, skipping over the active utility, starting the cutoff wall on the other side of the active utility, and returning to complete the cutoff wall installation after the active utility/pipeline has been removed. This applies to each of the live utility/pipeline relocations required within the cutoff wall alignment, as described in SECTION 02215 SURVEY INVESTIGATIONS, INSPECTIONS, AND OBSTRUCTION REMOVAL. Payment shall constitute full compensation for all plant, labor, materials, equipment, and incidentals necessary and required to perform and complete the work."

23. How will the contractor be compensated for solid waste disposal? What materials will be considered for off-site disposal (Section 02260-35, 3.4.15)? Will the USACE

representative be responsible for signing all waste manifests?

ANS: Section 02260, paragraph 3.4.14 states that, “Materials that may be disposed of on-site, at the designated stockpile area shown on the Drawings include excess bentonite slurry; excess slurry trench backfill mix; decommissioned well material; soil samples; and excess trench excavated materials. The Contractor shall provide procedures for the transport and disposal of excess waste materials in the stockpile”. Paragraph 3.4.15 states that, “All materials that have not been approved to be disposed of on-site shall be legally disposed off-site. Materials to be disposed of off-site include unopened containers of excess raw materials (e.g., powdered bentonite, grouting additives). The Contractor is solely responsible for the location of off-site disposal areas, the transport of waste to the disposal areas, and all costs associated with disposal’.

24. Who will provide the quality control of the backfill material during this slurry wall installation?

ANS: Per Section 02260, paragraph 2.4 reads in part, “The Contractor shall provide at least one Quality Control Inspector for slurry preparation and maintenance, trench excavation, and soil-bentonite backfill preparation and placement. A minimum of one Quality Control Inspector shall be on-site at all times for both the test section and the production cutoff wall”.

25. Do the drawings, Sheets 11 through 44, present all known information regarding underground structures or are there other documents that should be reviewed?

ANS: Those sheets plus sheets R01 and R02, plus the reports by Geraghty & Miller (refer to Section 00200) available at the Chicago District office.

26. Regarding “active utility”, as presented in Section 02215-6, 1.8 Coordination, what are the parameters for removal of an active utility?

ANS: Section 02215-6, 1.8 Coordination, states that, "The Contractor shall notify the Contracting Officer prior to commencement of work and during this Contract, in addition to the appropriate utility or pipeline owner, in the event

that an active utility or pipeline is discovered during the survey investigations and inspection work." Section 02215-11, 3.2.2 Inspection Trench Requirements, states that, "If the line is active, the Contractor shall immediately inform the Contracting Officer, mark the location of the utility, backfill the inspection trench, skip over the unknown utility, and continue with the trench on the other side of the utility."

Although it is not expected that any active utility is located where the inspection trench or any other excavation will be made, it is possible that one or more active utilities may be encountered. As stated in Section 002215-6, 1.8 Coordination, "For all utility lines encountered, whether shown on the Drawings or not, it is the Contractor's responsibility to take the necessary actions to determine whether the utility line is abandoned or active."

After the Contractor has informed the Contracting Officer of an active utility, the Contracting Officer will coordinate with the utility owner to identify if the utility can be relocated or removed, and identify an acceptable course of action. For the purposes of this contract, an active utility is not considered an obstruction, which would require removal, until such time as it has been abandoned.

27. Is a bid bond required?

ANS: A bid bond is not required, however performance and payment bonds are required of the contractor awarded this project.

28. Referencing Section 01100-5, 1.8 Barricades and Warning Signs, "…The Contractor shall coordinate with CSX Railroad to determine the need for a suitable warning system in regards to railroad crossing", please provide a contact name and phone number (not provided in Section 01100, 1.14 Coordination with Others) or provide specifications regarding this issue.

If this information is not made available to the bidder prior to the bid date, specifically the CSX contact and direction from CSX as to the suitable warning system, how

is the Contractor to price this cost when it cannot be determined at this time during the bid preparation?

ANS: The CSX contact name and phone number is Bruce Fowler, (708) 832-2254.

29. Similar to the previous question, please provide further clarification regarding the "unrestricted at-grade crossing" identified in Section 01100-10, 1.14c. CSX Railroad Spur and Relocation.

ANS: The CSX contact name and phone number is Bruce Fowler, (708) 832-2254.

30. For previous intrusive activities performed onsite (by anyone at any time), what protocol was implemented for air emissions? Please provide specific reference(s) for these activities or protocols or the actual information.

ANS: Air monitoring requirements, as specified in Section 01410, have not been performed on similar intrusive activities performed by the Corps previously.

31. When will the USACE respond to the previously submitted questions? Will questions be accepted and responded to by the USACE after October 5, 2001.

ANS: Questions can be submitted after October 5, 2001 but they may or may not be answered by the Corps. If they are answered an amendment would be issued to all Planholders.

32. The bid documents identify existing wells to be "decommissioned" (80) and others "not to be decommissioned" (19). What is the disposition of other wells onsite, shown on the drawings (i.e. CE-102, CE-105, CE-107, CE-108, etc.), not specifically addressed?

ANS: There are now only 42 wells to be decommissioned and they are the following: BD-03, BD-04, OEP-001 through OEP-008, P-115 through P-134, P-11 through P-16, P-18, MW-4, MW-25, MW-26, MW-27, and MW-31. Construction diagrams are not available for the following wells to be decommissioned: BD-03 and BD-04, OEP-001 through OEP-008, and P-115 through P-134. Construction diagrams for the remaining wells to be decommissioned are provided in Appendix B of Section 00320. Regarding CE-102, CE-105, CE-107, and CE-108 they are not wells but borings locations only.

33. Boring Location Plan, B-01, Note 1, identifies in Note 1, 80 wells to be decommissioned and 17 to remain (and at least another four on the property with unknown disposition shown on the drawing).

The Construction Solicitation and Specifications, dated August 2001, Section 320-Geotechnical Data, Appendix A cover page identifies 76 boring logs, with only 27 borings (to be decommissioned) consistent with B-01. *There wasn't any direction whether these borings are to remain or be decommissioned.* An additional 29 borings were listed (BP1 through BP29) without direction.

Furthermore, the Construction Solicitation and Specifications, dated August 2001, Section 320-Geotechnical Data, Appendix B cover page identifies the same 97 boring logs as with B-01 (with either construction diagrams available or not), with *all of these borings identified to be decommissioned.*

Contract clause 52,236-21 Specifications and Drawings for Construction states the specification shall govern. Which set is correct? Please specify how many and which ones are to remain or to be decommissioned. What is the relevance of the additional borings listed in Appendix A (BP1 through BP29)?

ANS: See answer to Question No. 32. In addition there are 22 existing wells on-site that will not be decommissioned but that the contractor is responsible for obtaining daily water and free product levels from (refer to Section 02260) Furthermore there are numerous wells located in the BP Amoco/ARCO area that will not be decommissioned, boring logs and well as-builts have been provided in Section 00320 for information purposes only.

34. Based on the complexity of the site conditions and the required contract activity precedence, will the USACE provide an additional two to three weeks for preparation of bids?

ANS: Amendment Number extended the bid date.

35. Is it possible to move the slurry wall location in from the property lines if conditions warrant? For example, we have concerns for the stability of the slurry

wall along the canal based on it current alignment (i.e. 40 feet from the property line).

ANS: Optional bid item 0019 to construct the 2000 lineal feet of inspection trench and cutoff wall between approximately Station 00+00 to 20+00 has been deleted from the solicitation, therefore the question is no longer relevant.

36. What is the estimated distance of the slurry wall centerline from the centerline or right-of-way for Cline Avenue? It is not clear from the drawings.

ANS: A survey to precisely locate the centerline of Cline Avenue was not performed by COE as part of the design effort for the project plans and specifications. Scaling off of drawing C-01, the distance varies between the slurry wall centerline and the Cline Avenue centerline, with the approximate range being 140’-145’.

37. Does the District know the type of footings on which Cline Avenue is constructed?

ANS: The Chicago District does not have this information. It is recommended that interested parties should contact INDOT for this data.

38. What is the estimated distance of the slurry wall centerline from the centerline or right-of-way on Indianapolis Boulevard? It is not clear from the drawings.

ANS: A survey to precisely locate the centerline of Indianapolis Blvd. was not performed by COE as part of the design effort for the project plans and specifications. Scaling off of drawing C-01, the distance varies between the slurry wall centerline and the Indianapolis Blvd. Centerline, with the approximate range being 134’-138’.

39. Are there any known underground utilities parallel to the slurry wall alignment within the right-of-way of Indianapolis Boulevard?

ANS: The known underground utility data for this area is presented on drawings C-06 through C-11 of the plan set. Further utility information can be found in specification

section 00200, section 00800 paragraph 1.4.e., and section 01100 paragraph 1.14.

40. Drawing R-02 – Where is the steel sheetpile bulkhead located relative to the proposed slurry wall stationing along the canal?

ANS: You can use the reference drawings ("R" drawings) to determine the location of the bulkhead. However, optional bid item 0019 to construct the 2000 lineal feet of inspection trench and cutoff wall between approximately Station 00+00 to 20+00 has been deleted from the solicitation, therefore the question is no longer relevant.

41. Drawing R-02 – What is the status of the fire lines and water lines shown on the drawing?

ANS: As far as the Corps knows, all lines are dead.

42. Slurry wall test section – What if the specified drawdown in the observation wells with the slurry wall test section is not obtainable over a reasonable period of time? Would an additional extraction well(s) be required, or is a reasonable drawdown approaching equilibrium acceptable for evaluation purposes?

ANS: The number, diameter, and depth of the wells are to be determined by the contractor. What is shown on the drawing are the minimums.

43. The information that is asked for in (SECTION 00115) Section 1.a. Specialized Corporate Team Experience appears to be redundant with the information required in Section 1.c. (Past Performance). We read the requirement of providing the information required in Section 1.a. to mean that we are to submit project descriptions (in the format of your template) to satisfy this requirement; and that Section 1.c. required a list of references. Upon close reading, however, it appears that the District wants the Project Descriptions in Section 1.c. Could the District clarify in which section the Project Descriptions belong?

ANS: Project descriptions go in 1.a and references go in 1.c

44. Related to the previous question, the District has included a template Project Description, but a requirement to use this template is not in the Procedures for Submittal of Offers. Is the use of the Project Description template required?

ANS: A template is not required.

45. Is the use of the template Resume Form required or optional?

ANS: Optional.

46. Please confirm that offerors can replicate the templates for the resumes and Project Descriptions electronically (using their word processing programs).

ANS: Yes.

47. Our company's CIH is also the corporate Safety and Occupational Health Manager, with the same duties as noted in your specification. Is it acceptable to the District to have these two positions "dual-hatted" (staffed with the same person)?

ANS: Yes.

48. If the offeror plans to assign a full-time SSHO to the site, is it possible to reduce the frequency of site visits by the CIH or the Safety and Occupational Health Manager?

ANS: The minimum frequency of site visits by the Safety and Occupational Health Manager is specified in Section 01351, Paragraph 1.8.3.2.

The frequency of site visits for the CIH is not specified. The frequency of site visits must be as needed to ensure that the duties specified in Section 01351, Paragraph 1.8.2.2 are accomplished.

A full-time SSHO must be assigned to the site on a full-time basis for the duration of field activities, as specified in Section 01351, Paragraph 1.8.4.2.

49. Please verify the quantity for ITEMS 0017AA and 0017AB.

ANS: They are correct.

50. What pay item is the railroad grade crossing included in, as required in SECTION 01100, 3.2.2?

ANS: In Item 1.

51. Separator spec section 11500 indicates no performance rating for the separator. What effluent concentration is acceptable? Will an NPDES permit be required to allow effluent back into the ground? If a permit is required, what will be parameters for effluent concentration?

ANS: (same as Question 4) The discharge of the water from the oil/water separator will be infiltrated back into the ground; consequently, a discharge water quality has not been specified, and a permit is not required to allow effluent water seep back into the ground.

52. Does the 4% bentonite content required include bentonite that is added as slurry as well as that added in dry form? (the 4% requirement is referenced in several different paragraphs).

ANS: See answer to Question No. 21.

53. Could the time after which cleaning the backfill face is required be extended to cover normal nightly and weekend shutdowns? Eight hours is too short! Reference Section 02260, paragraph 3.4.8, Trench Cleaning.

ANS: Section 02260, paragraph 3.4.8 now states in part, “If soil-bentonite backfill placement operations have ceased for longer than 72 hours or there is evidence of a collapse, the face of the soil-bentonite backfill slope shall be cleaned prior to the placement of additional soil-bentonite backfill”.